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SPILL PREVENTION, CONTROL & COUNTERMEASURES PLAN

DUKE UNIVERSITY
DURHAM, NORTH CAROLINA

NOVEMBER 2016

CERTIFICATION

Leaf Environmental & Engineering, P.C. certifies that it has used standard and accepted practices in completion of this project. The undersigned (and their appointees) shall have no liability or obligation to any party other than Duke University (and its successors or assigns) and the undersigned's (and their appointees') obligations are limited to fraudulent statements herein made, or to negligence.

Steven Gerrald, E.I.
Environmental Technician

11-15-16
Date

Jack H. Garrison, Jr.
Senior Environmental Consultant

11-15-16
Date

SPILL PREVENTION, CONTROL, & COUNTERMEASURES PLAN

for

DUKE UNIVERSITY
Durham, North Carolina
Durham County

CERTIFICATION

I certify that a Senior Environmental Consultant under my direction has visited and examined the facility, and being familiar with the provisions of 40 CFR Chapter I, Subchapter D, Part 112, attest that (1) this Plan has been prepared in accordance with good engineering practices, including consideration of industry standards, (2) inspection and testing procedures have been developed and incorporated or referenced as appropriate and (3) the Plan is adequate for the facility.

Tim W. Monroe, P.E.
Senior Environmental Engineer
Leaf Environmental & Engineering, P.C.

Date: 6/19/15 Registration No. 28331 State: NC

Leaf Environmental & Engineering, P.C. is licensed to practice engineering in North Carolina. The certification number of the corporation is C–4104.

MANAGEMENT APPROVAL

Duke University OESO will commit the necessary resources to ensure compliance with this SPCC Plan.

Signature: _____ 12/16/15
Name: Wayne Thomann Date
Title: Director, Duke University OESO

This SPCC Plan has the full approval of the management of Duke University campus so that the necessary resources will be committed in order to meet all plan requirements.

Signature: _____ 12-16-15
Name: John Noonan Date
Title: Vice President – Facilities

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President / Senior Environmental Engineer
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Signature: _____ _____
Name: John Noonan Date
Title: Vice President – Facilities Management

SECTION 1.0
GENERAL INFORMATION

1.1 FACILITY NAME

Name:	Duke University
Mailing Address:	DUMC 3914 (Occupational & Environmental Safety Office)
	Durham, North Carolina 27710
Facility Address:	Various Facilities on Duke University Campus
	Durham, North Carolina 27708

1.2 FACILITY LOCATION

Duke University facilities are located in the City of Durham, Durham County, North Carolina, latitude N36°–00'–09" longitude W78°–56'–19" (see Figure 1). The facilities are located north of Duke University Road (Central & West Campus) and north of Main Street (East Campus). Numerous facilities on campus have storage areas for petroleum products associated with emergency generators or other systems. See Figure 2 for the location of all Duke University facilities.

1.3 FACILITY DESCRIPTION

The Duke University facilities are comprised of academic, research, maintenance, and athletic facilities located on West, Central, and East Campuses (see Figure 2). With the exception of several storage areas for maintenance department purposes and transformers, petroleum storage facilities serve diesel emergency generators, fire pumps or elevators dedicated to a particular building or structure. The West Campus Steam Plant, Duke University Transportation, Duke University Medical Center and Duke University Marine Lab each have a separate SPCC Plan.

1.4 SPILL PLAN TEAM

Facility employees who are responsible for implementing this Plan and have full authority to commit the necessary resources are:

Name:	John Noonan
Title:	V.P. Facilities Management
Telephone:	Office: (919) 660-4252

Additional personnel that are trained in spill response procedures and are familiar with the SPCC Plan are identified in the Spill Training Records that are maintained in the OESO database (environmental files).

1.5 PLAN AUTHORITY

This Plan is required by Congress through its enactment of Public Law 92–500, the Federal Water Pollution Control Act, Section 311 (j)(1)(c).

Rules and regulations controlling the contents of this Plan were published by the US EPA as 40 CFR Part 112, Chapter I, Subchapter D July 17, 2002 with subsequent amendments up to and including October 2010.

1.6 PLAN AVAILABILITY

The SPCC Plan will be maintained on–site at the following locations and will be available for review upon request.

Durham County Fire Marshal
2422 Broad Street
Durham, North Carolina 27704

SPCC Coordinator Office

OESO Director's Office

Campus Police Office

In addition, all records described in Section 9.0 of this Plan will be maintained in the Facilities Management Department environmental files.

SECTION 2.0
PETROLEUM PRODUCT STORAGE FACILITIES

Diesel fuel is stored in various locations throughout the Duke University campus for use in emergency generators, and in several locations for use in maintenance equipment. Generator tanks are filled infrequently as use of generators is limited. See Figure 2 for locations of all storage tanks. The total estimated quantity of typical on–site storage of petroleum is approximately 159,490 gallons. Oil filled operational equipment containing bulk quantities of oil (55 gallons or more) on the Duke University campus include pad mount transformers and hydraulic elevators and account for approximately 99,775 gallons of the total estimated quantity.

2.1 INDUSTRY STANDARDS

Relevant industry standards, findings from facility inspections and documentation from petroleum equipment manufacturers were considered in preparing this Plan. Based on these information sources it was determined that oil storage equipment has been designed, constructed, installed and maintained according to industry standards or good engineering practices and they are compatible with the stored materials and storage conditions. Where specified, specific industry standards relating to oil storage equipment, inspections, secondary containment, and overfill protection are addressed in the appropriate sections of this Plan. Any modifications necessary to ensure good engineering practices that are utilized throughout the facilities to prevent a petroleum release are listed in Section 2.3 of this Plan.

2.2 DESCRIPTION OF OIL STORAGE AND HANDLING FACILITIES

This section briefly describes all oil storage and handling facilities that are covered under this Plan. Additional information on containment systems and fail–safe engineering are included in Section 4.0.

2.2.1: 7743 Cameron Indoor Stadium (115–gal)

Diesel fuel for the Cameron Indoor Stadium emergency generator is stored in a steel, double wall, 115–gallon, aboveground, belly style storage tank, outside and on the northeast side of the building within a fenced and locked enclosure (see Figure 3). The steel double wall provides secondary containment. The tank is filled via a fill port on top of the tank.

2.2.2: 7196 Jordan Building (200–gal)

Diesel fuel for the Jordan Building emergency generator is stored in a steel, double wall, 200–gallon tank/generator unit, outside and at the rear of the building (see Figure 4). The steel double wall provides secondary containment. The tank is filled via a fill port within the generator enclosure.

2.2.3: 7766 Teer Engineering Library (500–gal)

Diesel fuel for the Teer Engineering Library building emergency generator is stored in a steel, single wall, 500–gallon, remote aboveground storage tank, outside and at the rear of the building at the end of the service road (see Figure 5). A concrete vault provides secondary containment. Underground lines to the generator have a protective sleeve for corrosion and leak protection. The tank is filled via a fill port on top of the tank.

2.2.4: 7704 Perkins Library (620–gal)

Diesel fuel for the Perkins Library emergency generator is stored in a steel, single wall, 620–gallon, remote aboveground storage tank, inside the generator room west of the library (see Figure 6). A welded steel basin provides secondary containment. The tank is filled via a fixed connection in a cabinet located on the stairs adjacent to the generator room.

2.2.5: Duke Gardens Maintenance (250–gal & 150–gal)

Gasoline for Duke Gardens maintenance equipment is stored in a steel, double wall, 250–gallon aboveground storage tank. Diesel fuel for maintenance equipment is stored in a steel, double wall 150–gallon aboveground storage tank. Both tanks are located outside adjacent to the maintenance building, off Anderson Drive (see Figure 7). Fuel is dispensed to maintenance equipment via tank mounted hand pumps, and the tanks are filled via fill ports on top of the tanks.

2.2.6: 7777 Wilson Recreation (350–gal)

Diesel fuel for the Wilson Recreation building emergency generator is stored in a steel, double wall 350–gallon tank/generator unit, outside and at the east end of the building and adjacent to the chillers (see Figure 8). The steel double wall provides secondary containment. The tank is filled via a fill port within the generator enclosure.

2.2.7: 7741 Schwartz–Butters Building (384–gal)

Diesel fuel for the Schwartz–Butters Building emergency generator is stored in a steel, double wall, 384–gallon tank/generator unit, outside and north of the parking lot, north of the building (see Figure 9). The steel double wall provides secondary containment. The tank is filled via a fill port within the generator enclosure.

2.2.8: 7765 Gross Chemistry Building (1,000–gal)

Diesel fuel for the Gross Chemistry Building emergency generator is stored in a steel, single wall, 1,000–gallon, remote aboveground storage tank, outside and adjacent to the west side loading dock (see Figure 10). A concrete vault provides secondary containment. The aboveground lines to the generator have a protective sleeve for corrosion and leak protection. The tank is filled via a top mounted fill port.

2.2.9: 7749 Physics Building (55-gallon drum)

Used oil is stored in 55–gallon drum(s) inside the Physics Building (see Figure 31). Drum(s) are stored on a containment pallet to control leaks and spills. Spills of used oil at the site will be contained within the building.

2.2.10: 7756 North Building (500–gal)

Diesel fuel for the North Building 387 HP Caterpillar trailer–mounted emergency generator is stored in a steel, double wall, 500–gallon tank/generator unit, outside and on the northwest side of the building (see Figure 12). The steel double wall belly tank provides secondary containment. The tank is filled via a fill port within the generator enclosure.

2.2.11: 7970 Library Services Center (100–gal & 187–gal)

Diesel fuel for the Library Services Center is stored in a steel, double wall 100–gallon tank/generator unit, outside on the west side near the trash dumpster (Figure 60). Diesel fuel for the emergency fire booster pump is stored in a 187–gallon steel, single wall aboveground storage tank inside the fire pump building on the south side of the site. Both tank fill ports are within enclosures.

2.2.12: 7760 Fuqua Business School (850–gal & 600–gal)

Diesel fuel for the Fuqua Business School emergency generators is stored in steel, double wall tank/generator units equipped with sub–base diesel fuel tanks of 850 and 600 gallons capacity. The 600–gallon tank is located inside the north side of the mechanical building and the 850–gallon tank is located just outside the mechanical building north of the school (see Figure 14). Steel double walls provide secondary containment for each tank. Each tank is filled via a fill port within the generator enclosure.

2.2.13: 7725 Sanford Public Policy Building (200–gal)

Diesel fuel for the Sanford Public Policy Building emergency generator is stored in a steel, double wall 200–gallon tank/generator unit, inside the northwest corner of the mechanical room in the building basement (see Figure 15). The steel double wall provides secondary containment. The tank is filled via a fill port mounted outside of the building.

2.2.14: 7764 Primate Center (1,800–gal)

Diesel fuel for the Primate Center emergency generator is stored in a steel, double wall 1,800–gallon tank/generator unit, outside and at the south side of the facility adjacent to the maintenance driveway (see Figure 16). The steel double wall provides secondary containment. The tank is filled via a fill port within the generator enclosure.

2.2.15: Duke Forest Maintenance (500–gal & 250–gal)

Gasoline for Duke Forest maintenance equipment is stored in a steel, single wall, 500–gallon gasoline aboveground storage tank. Diesel fuel for maintenance equipment is stored in a steel, single wall, 250–gallon aboveground storage tank. Used oil and lubricants for the facility are stored in 55–gallon steel drums within the containment area. All petroleum bulk storage is located outside and northeast of the maintenance building (see Figure 17). The storage tanks are within a concrete secondary containment dike with rain protection. Gasoline and diesel fuel are dispensed to maintenance equipment via tank mounted hand pumps, and the tanks are filled via fill ports on top of the tanks.

2.2.16: 7791 Bryan Student Center (1,000–gal)

Diesel fuel for the Bryan Student Center emergency generator is stored in a steel, double wall, 1,000–gallon, remote aboveground storage tank, outside at the southwest side of the building next to the service road (see Figure 18). The steel double wall provides secondary containment. Underground lines to the generator have a protective wrapping for corrosion and leak protection. The tank is filled via a fill port on top of the tank.

2.2.17: 7776 Life Sciences Research Center (LSRC) (500 & 500–gal)

Diesel fuel for the LSRC emergency generator is stored in a steel, double wall, 500–gallon tank/generator unit and in a steel, double wall, 500–gallon, aboveground storage tank. Both tanks are located outside and north of the building loading docks (see Figure 19). The steel double wall provides secondary containment for the tank/generator unit, and the remote tank has interstitial monitoring. The generator unit is filled via a fill port within the generator enclosure, and the remote tank is filled via a fill port on top of the tank.

2.2.18: West Campus Grounds Maintenance (2x500–gal & 100–gal)

Gasoline for maintenance equipment is stored in a steel, single wall, 500–gallon aboveground storage tank. Diesel fuel for maintenance equipment is stored in a steel, single wall, 500–gallon aboveground storage tank. The diesel and gasoline tanks are located outside, at the north end of the maintenance shed (see Figure 20). The gasoline and diesel fuel storage tanks are within a single concrete vault for secondary containment. Gasoline and diesel fuel are dispensed to maintenance equipment via tank mounted hand pumps, and the tanks are filled via fill ports on top of the concrete vault. Used oil is stored in a steel, single wall 100–gallon aboveground tank located outside and east of the shop building. The tank is within a welded steel secondary containment basin with rain protection. The tank is filled by hand from within the building. Various motor oils and lubricants are stored in several 55–gallon steel drums within the shop building. Oil traps in the shop building floor provide secondary containment for the drums.

2.2.19: 8047 Washington Duke Inn (250–gal)

Diesel fuel for the Washington Duke Inn emergency generator is stored in a steel, double wall, 250–gallon tank/generator unit, outside and southeast of the building (see Figure 21). The steel double wall provides secondary containment. The tank is filled via a fill port within the generator enclosure. One 294–gallon steel, double wall grease container is located on the shipping/receiving dock and is also shown on Figure 21. The container is filled manually and emptied by vacuum truck.

2.2.20: 7735 CIEMAS (1,000–gal)

Diesel fuel for the CIEMAS building emergency generator is stored in a steel, double wall, 1,000–gallon tank/generator unit, outside and east of the building (see Figure 11). The steel double wall provides secondary containment. The tank is filled via a fill port within the generator enclosure.

2.2.21: 7708 Westbrook Divinity School (194–gal)

Diesel fuel for the Westbrook Divinity School emergency generator is stored in a steel, double wall, 194–gallon tank/generator unit, outside and south of the generator room (see Figure 6). The steel double wall provides secondary containment. The tank is filled via a fill port within the generator enclosure.

2.2.22: 7768 Environmental Hall (100–gal)
REMOVED.

2.2.23: 7245 East Dorm Equipment Building (500–gal)
Diesel fuel for the Equipment Building emergency generator is stored in a steel, double wall, 500–gallon tank/generator unit, outside and west of the building in the locked storage area (see Figure 23). The steel double wall provides secondary containment. The tank is filled via a fill port within the generator enclosure.

2.2.24: 7795 WEL Dorm (1,000–gal)
Diesel fuel for the WEL dorm emergency generator is stored in a steel, double wall, 1,000–gallon tank/generator unit, outside and south of the building near the transformers (see Figure 24). The steel double wall provides secondary containment. The tank is filled via a fill port within the generator enclosure.

2.2.25: 7739 Rubenstein Hall (150–gal)
Diesel fuel for the Rubenstein Hall emergency generator is stored in a steel, double wall, 150–gallon tank/generator unit, inside a locked room on the ground floor of the building (see Figure 25). The steel double wall provides secondary containment. The tank is filled via a fill port within the generator enclosure.

2.2.26: 7738 French Science Center (1,000–gal)
Diesel fuel for the French Science Center emergency generator is stored in a steel, double wall, 1,000–gallon belly tank, outside and across from the loading dock at the rear of the Phytotron building 7771 (see Figure 33). The steel double wall provides secondary containment. The tank is filled via a fill port within the generator enclosure.

2.2.27: 7815 Nocturnal Lab (Primate Center) (500–gal)
Diesel fuel for the Nocturnal Lab emergency generator is stored in a steel, double wall, 500–gallon tank/generator unit, outside and on the north end of the building (see Figure 27). The steel double wall provides secondary containment. The tank is filled via a fill port within the generator enclosure.

2.2.28: 7733 Center for Athletic Excellence (125–gal)
Diesel fuel for the Center for Athletic Excellence emergency generator is stored in a steel, double wall, 125–gallon tank/generator unit, outside and on the west corner of the building (see Figure 28). The steel double wall provides secondary containment. The tank is filled via a fill port within the generator enclosure.

2.2.29: 7224 East Campus Science Building Friedl (500–gal)
Diesel fuel for the East Campus Science Building emergency generator is stored in a steel, double wall, 500–gallon tank/generator unit located inside a brick wall barrier across the street and east of the building (see Figure 29). The steel double wall provides secondary containment. The tank is filled via a fill port within the generator enclosure. Security is provided by the generator enclosure, normally locked, and the brick wall barrier, which is closed and locked by two expanded metal gates.

2.2.30: 7740 Finch-Yeager Building
Building has been demolished.

2.2.31: Elevators (throughout campus)
Elevators located in buildings throughout the university campus have small reservoirs of hydraulic oil contained within the mechanical rooms. Hydraulic cylinders and piping/hoses also contain hydraulic fluid. The locations of hydraulic elevator equipment rooms are listed below with the corresponding Figure. Spills and leaks will be contained within the elevator pit, equipment room or building, unless noted in Section 2.3.

- Bryan Student Center (see Figure 18)
- Phytotron Building (see Figure 33)
- Nasher Art Museum (see Figure 35)
- Lilly Library (see Figure 36)
- Blackwell Dorm (see Figure 37)
- R.D. Thomas Center (see Figure 38)
- Sheffield Tennis Center (see Figure 40)
- Bell Tower Dorm (see Figure 41)
- Friedl Building (see Figure 29)
- Hudson Hall (Teer Engineering) (see Figure 5)
- Crowell (see Figure 49)
- White Lecture (see Figure 50)
- Carr (see Figure 51)
- East Dining (see Figure 52)
- Memorial Gym (see Figure 53)
- Academic Advising (see Figure 54)
- Biddle Music (see Figure 48)
- Randolph (see Figure 55)
- Smith Warehouse (see Figure 56)
- Bevan Building (Coke Plant) (see Figure 57)
- 705 Broad Street (see Figure 58)
- Franklin Center (see Figure 59)
- Bostock (see Figure 6)
- Kilgo (see Figure 47)
- PG4 – at Bryan Center (see Figure 18)
- Law School (see Figure 39)
- Yoh (see Figure 46)
- Fell (see Figure 44)
- Decker (see Figure 43
- Mitchell (see Figure 43)
- Edens (see Figure 26)
- Nuclear Lab (see Figure 32)
- Baldwin (see Figure 48)
- Teer Library (see Figure 5)
- Wilson Rec. (see Figure 8)
- Trent Drive Hall (see Figure 30)

- Washington Duke Inn (see Figure 21)
- Gross Chemistry (see Figure 10)
- Fuqua Business (see Figure 14)
- Sanford Public Policy (see Figure 15)
- CIEMAS (see Figure 11)
- TelCom (see Figure 11)
- LSRC (see Figure 19)
- Divinity (see Figure 6)
- CAE (see Figure 28)
- West Campus Chiller Plant #2 (see Figure 22)
- East Campus Steam Plant (see Figure 13)

2.2.32: Electrical Substations and Transformers (throughout campus)

Substations and transformer units throughout the university include oil–filled transformers with drain plugs. For catastrophic failures and/or leaks, call Public Safety (Campus Police) at 911. Public Safety will notify the High Voltage Shop for emergency response.

2.2.33: 7855 West Campus Chiller Plant #2 (Four 10,000-gal)

Diesel fuel is stored for four (4) 3250 KW Stand–By Emergency Generators in UL–142 double–wall steel base type tanks (see Figure 22). The generator units are located on a concrete slab adjacent to the chiller building. Each tank is filled through a 2–inch NPT fill port which is capped and behind an access door with a built–in locking mechanism. Each tank is provided with a fuel gauge, 90% and 95% full indicator light, and an automatic electronic valve shutoff (overfill prevention) at the 95% full level. Indicator lights and gauge are adjacent to the fill port. The concrete supporting the generator sets (generator/tank unit) drains to the tanker parking area which is recessed and outfitted with a manually operated valve in a nearby manhole which will close the underground drainage system.

2.2.34: 7796 West Campus Chiller Plant #1 (oil filled transformer storage & one 10,000–gal emergency generator base tank)

As many as 30 oil filled transformers and medium voltage switches are stored in disconnected condition at the West Campus Chiller Plant #1 (see Figure 45). The amount of dielectric fluid (oil) stored in the electrical equipment ranges from a few gallons to as much as 700 gallons at the storage location shown in Figure 45. Storage is on a concrete pad with secondary containment provided. Energized transformers for the chiller plant are also shown on Figure 45.

Diesel fuel is stored in one (1) 3250 KW Stand–By Emergency Generator in a UL–142 double–wall steel, base type tank (see Figure 45). The generator unit is located on a concrete slab adjacent to the chiller building. The 10,000–gallon tank is filled through a 2–inch NPT fill port which is capped and behind an access door with a built–in locking mechanism. The tank is provided with a fuel gauge, 90% and 95% full indicator light, and an automatic electronic valve shutoff (overfill prevention) at the 95% full level. Indicator lights and gauge are adjacent to the fill port. The tanker parking area has a recessed storm drain which discharges to the southeast into an unnamed tributary of Sandy Creek.

2.2.35: 7794 East Campus Steam Plant (1200-gal)

Diesel fuel is stored for one (1) 900 KW Stand-By Emergency Generator in a UL-142 double-wall, steel 1200–gal belly tank (see Figure 13). The generator unit is installed on a concrete slab adjacent to the steam plant. The tank is filled through a 2" fill port which is capped and behind an access door with built-in locking mechanism. The fuel tank is provided with a fuel gauge, high level indicator light, and overfill protection. The fill tanker parks in a paved area adjacent to the generator unit which is equipped with a drain that includes a removable plug.

2.2.36: Duke University Golf Course (500–gal diesel, 500–gal gasoline, & 110-gal used oil)

The maintenance department for the golf course fills equipment and vehicles with fuel from one 500–gallon gasoline and one 500–gallon diesel tank installed in a concrete dike adjacent and just NW of the maintenance shed (see Figure 34). Used oil generated by maintenance activities is stored in two 55–gallon drums on a containment pallet located just inside the northeast corner of the building (see Figure 34). Both fuel tanks are of steel, double wall, UL–142 construction and are equipped with a float type gauge and standard and emergency venting. The fuel tank installation is fully fenced and the gate locked when the shop is unattended. Lighting for the installation is provided by building mounted lights. Both fuel tanks are also equipped with tank mounted electric pumps with dispensing hose and hand valve. The dispensing valve must be removed to energize the pump and has locking means which will disable the pump. Remote cutoff for the pumps is located in the shop building. Power to the pumps is locked out when the maintenance department is not open.

2.2.37: 7512 Trent Drive Building

Hydraulic oil for campus elevators is stored in the Trent Drive Building in 55–gallon drums on the first floor just inside the dock area (see Figure 30). Drums are provided secondary containment by portable containment pallets. Drums are emptied by hand or portable drum pump.

2.2.38: 7782 R.D. Thomas Building

Used grease is stored in a steel, single wall container behind the east building (see Figure 38). The container is portable and installed on pavement and adjacent to a retaining wall. Kitchen grease is manually transferred to the container which is emptied by vacuum truck.

2.2.39: 7219 Baldwin Auditorium (at Biddle 7232) (165–gal)

Diesel fuel is stored in a 165–gallon steel, double wall aboveground storage tank for the emergency fire booster pump beside the Biddle loading dock (Figure 48). The tank is filled via a fill port with a spill bucket on the east side of the fire pump enclosure.

2.2.42: 7767 Triangle University Nuclear Lab (TUNL)

Lubricating oil is stored in bulk quantities (55–gallon drums) inside the building in the maintenance area near the shop dock (see Figure 32). Drums are provided secondary containment by portable containment pallets. Drums are emptied by hand or portable drum pump.

2.3 PROPOSED MODIFICATION AND COMPLETION SCHEDULE

Based on the site inspection and review of industry standards conducted in the process of developing this Plan, the following modifications and implementation schedule have been identified as being necessary to ensure operation in accordance with good engineering practices.

- Equipment rooms for the following hydraulic elevator reservoirs should be equipped with means to prevent a full contents spill from migrating beyond the access door *(40 CFR Part 112.7(c)). Potential means to accomplish this is a raised door threshold, which uses the room as containment (Southern Elevator engineers should be consulted for compliance with building and fire codes prior to installation of a raised threshold at the entrance to any elevator equipment room).*

  Teer Annex: *Estimated 3" high threshold required.*

  Washington Duke Inn (Golf Side #1): *Estimated 3" threshold required.*

- Means to contain a full contents spill from the grease container at the R.D. Thomas facility should be provided *(40 CFR Part 112.12(a)). Curbing on the paved surface may be installed to provide containment for a grease spill or the existing single wall container may be replaced with double wall unit.* The last on-site review noted that R.D. Thomas was undergoing renovations and access was not available.

- The fire pump house wall to floor interface at the Library Services Center should be sealed to contain potential releases from the storage tank. Also, the floor drain should be plugged.

SECTION 3.0
SPILL EVENTS, CONTAINMENT STRUCTURES, & SPILL MIGRATION

This section briefly addresses potential spill events at Duke University, migration pathways and containment structures.

3.1 SPILL QUANTITY & MIGRATION

All significant spills at the Duke University campus should be contained by secondary containment or via other diversionary means. Spills that are not contained and stormwater runoff from the Duke University West campus enters into either the Duke or municipal stormwater conveyance systems, which discharge at several points south and east of the University into an unnamed tributary of Sandy Creek. The unnamed tributary then flows approximately ½ mile southwest before discharging into Sandy Creek, which flows to the south for approximately 3½ miles before discharging into New Hope Creek. New Hope Creek flows to the south for approximately 1 mile prior to discharging into Jordan Lake. The maximum spill that can occur at the facility is 2,500 gallons (fill tanker).

Uncontained spills and stormwater runoff from the East Campus enters into either the Duke or municipal stormwater conveyance systems north and east of East Campus into an unnamed tributary of Ellerbe Creek. Ellerbe Creek flows to the east/northeast for approximately 7 miles into Falls Lake. The maximum spill that can occur at East Campus is 2,500 gallons (fill tanker).

3.2 SPILL PREDICTIONS

The following is a summary of predicted potential spill scenarios, spill quantities, flow rates, and spill destinations.

TABLE 1: SPILL SUMMARY

Source	Failure Type	Max. Volume	Release Rate	Direction of Flow / Destination	Containment
(1) Cameron Indoor Stadium	Tank Failure	115 gal	Moderate	To secondary containment	Steel double wall
	Fill Tanker Incident	2500 gal	Rapid	Toward drains between stadium & rec. center	Portable containment unit
(2) Jordan Building	Tank Failure	200 gal	Moderate	To secondary containment	Steel double wall
	Fill Tanker Incident	2500 gal	Rapid	Over lot toward storm drains	Portable containment unit
(3) Teer Engineering Library	Tank Failure	500 gal	Moderate	To secondary containment	Concrete vault
	Fill Tanker Incident	2500 gal	Rapid	Across service road toward storm drains	Portable containment unit
(4) Perkins Library	Tank Failure	620 gal	Moderate	To secondary containment	Steel double wall
	Fill Tanker Incident	2500 gal	Rapid	To driveway toward storm drains	Portable containment unit
(5) Duke Gardens Maintenance	Tank Failure	250 gal	Moderate	To secondary containment	Steel double wall
	Fill Tanker Incident	2500 gal	Rapid	To low area behind tanks (storm drain)	Portable containment unit
(6) Wilson Recreation	Tank Failure	350 gal	Moderate	To secondary containment	Steel double wall
	Fill Tanker Incident	2500 gal	Rapid	To low area next to building toward storm drain	Portable containment unit

Source	Failure Type	Max. Volume	Release Rate	Direction of Flow / Destination	Containment
(7) Schwartz–Butters Building	Tank Failure	384 gal	Moderate	To secondary containment	Fiberglass coating
	Fill Tanker Incident	2500 gal	Rapid	To ground next to tank and into neighboring wooded area	Portable containment unit
(8) Gross Chemistry Building	Tank Failure	1000 gal	Moderate	To secondary containment	Concrete Vault
	Fill Tanker Incident	2500 gal	Rapid	To service driveway to storm drains	Portable containment unit
(9) Physics Building	Drum damage or spill	55 gal	Moderate	To secondary containment or floor	Containment pallet and building floor
(10) North Building	Tank Failure	500 gal	Moderate	To secondary containment	Concrete dike
	Fill Tanker Incident	2500 gal	Rapid	Into lot then toward storm drain	Portable containment unit
(11) Library Services Center	Tank Failure	187 gal	Moderate	To secondary containment	Steel double wall or building floor
	Fill Tanker Incident	2500 gal	Rapid	Onto parking lot and down slope toward storm drains	Portable containment unit
(12) Fuqua Business School	Tank Failure	850 gal	Moderate	To secondary containment	Concrete vault
	Fill Tanker Incident	2500 gal	Rapid	Onto parking lot then toward both loading docks & storm drains	Portable containment unit
(13) Sanford Public Policy Building	Tank Failure	200 gal	Moderate	To secondary containment	Steel double wall
	Fill Tanker Incident	2500 gal	Rapid	Over parking lot & down road toward storm drains	Portable containment unit

Source	Failure Type	Max. Volume	Release Rate	Direction of Flow / Destination	Containment
(14) Primate Center	Tank Failure	1800 gal	Moderate	To secondary containment	Steel double wall
	Fill Tanker Incident	2500 gal	Rapid	Onto ground then toward storm drains near driveway	Portable containment unit
(15) Duke Forest Maintenance	Tank Failure	500 gal	Moderate	To secondary containment	Fiberglass double wall
	Fill Tanker Incident	2500 gal	Rapid	Toward storm drains or toward Research Dr.	Portable containment unit
(16) Bryan Student Center	Tank Failure	1000 gal	Moderate	To secondary containment	Steel double wall
	Fill Tanker Incident	2500 gal	Rapid	Into parking lot & toward road & storm drains	Portable containment unit
(17) LSRC	Tank Failure	500 gal	Moderate	To secondary containment	Steel double wall
	Fill Tanker Incident	2500 gal	Rapid	Down service drive toward road and into storm drains	Portable containment unit
(18) West Campus Grounds	Tank Failure	500 gal	Moderate	To secondary containment	Concrete dike
	Fill Tanker Incident	2500 gal	Rapid	Into containment basin or onto ground & into service parking area	Portable containment unit
	Container Failure/ Overturn	55 gal	Rapid	To shop floor	Oil traps
(19) Washington Duke Inn	Tank Failure	250 gal	Moderate	To secondary containment	Steel double wall
	Fill Tanker Incident	2500 gal	Rapid	Down parking lot toward storm drain	Portable containment unit
(20) CIEMAS	Tank Failure	1000 gal	Moderate	To secondary containment	Steel double wall
	Fill Tanker Incident	2500 gal	Rapid	Over driveway toward storm drain	Portable containment unit

Source	Failure Type	Max. Volume	Release Rate	Direction of Flow / Destination	Containment
(21) Westbrook Divinity School Addition	Tank Failure Fill Tanker Incident	194 gal 2500 gal	Moderate Rapid	To secondary containment To driveway toward storm drains	Steel double wall Portable containment unit
(22) Environmental Hall REMOVED					
(23) East Campus Equipment Room	Tank Failure Fill Tanker Incident	500 gal 2500 gal	Moderate Rapid	To secondary containment To ground and storm drain	Steel double wall Portable containment unit
(24) WEL Dorm	Tank Failure Fill Tanker Incident	1000 gal 2500 gal	Moderate Rapid	To secondary containment To ground and storm drain	Steel double wall Portable containment unit
(25) Rubenstein Hall	Tank Failure Fill Tanker Incident	150 gal 2500 gal	Moderate Rapid	To secondary containment To ground and storm drain	Steel double wall Portable containment unit
(26) French Science Center	Tank Failure Fill Tanker Incident	1000 gal 2500 gal	Moderate Rapid	To secondary containment To ground and storm drain	Steel double wall Portable containment unit
(27) Nocturnal Lab (Primate Center)	Tank Failure Fill Tanker Incident	500 gal 2500 gal	Moderate Rapid	To secondary containment To ground and woods	Steel double wall Portable containment unit
(28) Center for Athletic Excellence	Tank Failure Fill Tanker Incident	125 gal 2500 gal	Moderate Rapid	To secondary containment To ground and parking lot storm drain	Steel double wall Portable containment unit

Source	Failure Type	Max. Volume	Release Rate	Direction of Flow / Destination	Containment
(29) East Campus Science Building	Tank Failure	500 gal	Moderate	To secondary containment	Steel double wall
	Fill Tanker Incident	2500 gal	Rapid	To ground parking lot storm drain	Portable containment unit
(30) Finch-Yeager Building – REMOVED					
(31) Elevators	Leak / Equipment Failure	<100 gallons	Moderate	Into elevator mechanical room or shaft, possibly subsurface	None
(32) Electrical Substations & Transformers	Equipment Failure / Spill while servicing	700 gallons	Moderate	Onto ground in substation area (gravel)	None
(33) West Campus Chiller Plant #2	Tank Failure	10,000 gal	Moderate	To secondary containment	Steel double wall
	Fill Tanker Incident	8,000 gal	Rapid	To nearby storm drain	Prior to filling tanks, close manual valve in manhole for containment
(34) West Campus Chiller Plant #1	Tank Failure	10,000 gal	Moderate	To secondary containment	Steel double wall
	Fill Tanker Incident	8,000 gal	Rapid	To nearby storm drain	Portable containment unit & drain mat
(35) East Campus Steam Plant	Tank Failure	1200 gal	Moderate	To secondary containment	Steel double wall
	Fill Tanker Incident	2500 gal	Rapid	To pavement and drain	Plugged storm drain
(36) Duke University Golf Course	Tank Failure	500 gal	Moderate	To secondary containment	Steel double wall
	Fill Tanker Incident	2500 gal	Rapid	To secondary containment	Concrete dike

Source	Failure Type	Max. Volume	Release Rate	Direction of Flow / Destination	Containment
(37) Trent Drive Building	Drum Damage or Spill	55 gal	Moderate	To secondary containment	Containment pallet and building floor
(38) R. D. Thomas Building	Grease Container Failure	300 gal	Moderate	To pavement	None
	Spill from Vacuum Truck	3000 gal	Moderate	To pavement	None
(39) Baldwin Auditorium	Tank Failure	165 gal	Moderate	To secondary containment	Steel double wall
	Fill Tanker Incident	2500 gal	Rapid	To pavement and drain	Portable containment
(42) Triangle University Nuclear Lab (TUNL)	Drum Damage or Spill	55 gal	Moderate	To secondary containment	Containment pallet and building floor

SECTION 4.0
PETROLEUM PRODUCT SPILL PREVENTION MEASURES

The following practices and procedures are in place at Duke University in an attempt to minimize the risk of spills and leaks of hazardous substances and petroleum products.

4.1 GOOD HOUSEKEEPING

- Product inventory is carefully controlled to minimize quantities stored on site.
- Absorbent pads or other materials are used during equipment servicing to capture minor leaks and drips.
- Any leaks or drips during equipment servicing are immediately cleaned up.
- All drums and other containers of petroleum products and wastes are properly labeled.
- When product deliveries are made, the containers are promptly moved and stored in appropriate areas inside the buildings.
- All containers are stored in an orderly manner with adequate space for appropriate maneuvering.
- Spill cleanup supplies are located throughout the facility to facilitate quick cleanup in the event of spills.
- All storage areas are kept neat and orderly.
- Fill lines are closed, capped, and locked when not in use.
- Regular inspections are conducted in accordance with the schedule described in Section 7.0.

4.2 SECONDARY CONTAINMENT

The following procedures are in place to prevent or contain spills of petroleum products:

1. All oil storage tanks, hoses, pumps, piping, valves, gauges, and other petroleum storage and handling equipment are thoroughly inspected semi–annually for signs of leakage, damage, and deterioration.

2. All oil storage secondary containment means are inspected quarterly to ensure that the containment is not damaged or leaking and drain valves are closed and locked.

3. All petroleum drums and containers are kept tightly sealed when not in use and are regularly inspected for signs of leakage, damage, or deterioration.

4. During unloading of oil products, a trained employee is present to:

- Verify storage capacity for oil deliveries.
- Verify the quantity of product received or removed.
- Ensure that proper secondary containment or means to contain a spill is provided for the tanker and spill response supplies and equipment are available for the delivery vehicle.
- Place absorbent pads beneath all hose connections to absorb drips or leaks.
- Ensure that there are no leaks in fill line or pumps during unloading operations.

- Ensure that the hose is disconnected from the tank before the truck pulls away.
- Ensure that the tank or tanker does not overfill.
- Respond to and clean up spills or leaks which may occur.
- Ensure that a physical barrier (chocking of tanker wheels) is used to avoid the possibility of premature departure.
- Ensure that prior to departure of any tank truck, the driver closely inspects the drain valves and hoses for leakage.

5. Oil drums and other containers are immediately moved to appropriate storage locations and placed in contained areas upon delivery. Products are not temporarily stored in uncontained or high traffic areas.

6. All oil products are stored in areas with secondary containment to contain spills and leaks.

7. Absorbent drip pads are placed under all spouts and similar oil transfer equipment to ensure that drips and leaks from dispensing are absorbed and contained.

4.3 FAIL–SAFE MEASURES

- Fill lines or ports are closed, capped, and locked when not in use.
- Several storage tanks are equipped with interstitial monitoring and/or an electronic level gauge. All other tanks use mechanical or sight level gauges or levels are manually determined (stick).
- Corrosion protection is provided for underground product lines (plastic/PVC sleeve) and tanks (double wall, fiberglass reinforcement, concrete vault).
- Storage tanks are inspected and tested on a regular basis. Records of inspections are maintained as specified in Section 9.0.
- Some newer petroleum bulk storage installations are provided with active tanker containment and automatic overfill protection on the tanks.

4.4 TANK FILLING / UNLOADING

4.4.1 Tank Gauging

Tanks with mechanical level gauges are checked manually and repaired/calibrated as necessary to ensure proper operation. Tanks with interstitial monitoring and/or electronic level gauges are checked repaired/calibrated as necessary to ensure proper operation. This includes periodic manual (stick) verification of readings. All other tanks are gauged manually (stick).

4.4.2 Unloading

During all petroleum transfer operations, an employee familiar with SPCC Plan elements and spill prevention & response requirements is present to:

- Ensure spill response supplies and PPE are ready and accessible in case of a release.
- Ensure that the portable containment device is in place and functioning properly.
- Verify the quantities of product received or removed.
- Ensure that manual tank gauging is performed (gauge reading verified) prior to all deliveries and vacuum tanker capacity is adequate for used oil removal.
- Ensure that the driver remains with the vehicle during loading/unloading operations.

- Ensure that a physical barrier (chocking of the tanker wheels) is maintained to prevent the premature departure of the tanker truck.
- Ensure that there are no leaks in the piping or pumps during unloading operations and absorbent pads are placed beneath connections to absorb leaks or drips.
- Prevent overfilling. Throughout the filling process, the employee must have direct visual or audible communication with the tanker (i.e. two–way radio, whistle, etc.) if automatic overfill protection is not provided.
- Ensure that hoses are disconnected and valves (tanker and fill line) are closed before the delivery tanker departs.

Duke University has the following oil suppliers:

- Couch Oil Company – Primary Supplier
- Cary Oil Company – Secondary Supplier
- Alamance Oil Company – Secondary Supplier

After unloading, tanker truck drivers are required to examine the valves and outlets of their vehicles for leakage, and if necessary, tighten, adjust, or replace parts or equipment to prevent liquid leakage while in transit.

4.5 TRANSFORMERS

Substations and stand alone transformers are located throughout the Duke University and Duke University Medical Center campus. All oil filled transformers with oil reservoirs are inspected periodically by Duke University to ensure that the transformer is not leaking. All leaks or spills from transformers should be reported to the SPCC Coordinator.

SECTION 5.0
PETROLEUM PRODUCT SPILL CONTAINMENT AND CLEANUP

The types and locations of spill response materials and the appropriate response measures are discussed in this Section.

5.1 SPILL CONTAINMENT/CLEANUP MATERIALS

A trained spill response team is available 24 hours per day to respond to spills. The OESO Chemical Release Response Policy (see Appendix 6) provides for maintaining spill response supply inventories. The current spill response supply inventory is found in Appendix 5.

Spill response personnel have access to the following equipment:

Duke University Occupational & Environmental Safety Office:

- Spill Response Supplies – Room OESO 113 (see Appendix 5 for Contents)
- Spill Bag (see Appendix 5 for Contents)

- Personal Protective Equipment (Respirators, SCBA, aprons, goggles, gloves, etc.)
- Air Monitoring Equipment (Multigas Monitor, Organic Vapor Analyzer (PID), Mercury Detector, Chemical Specific Draeger Tubes)

Duke University Facilities & Maintenance Departments:

- The Grounds Maintenance Department, Steam Plant, and Golf Course Maintenance have front–end loaders, backhoes, and other heavy equipment that may be obtained and used for spill response if necessary.

5.2 SPILL RESPONSE PROCEDURES

5.2.1 Initial Response and Notification

Upon being notified or discovering a spill, leak, or other release, the responding person, who has received annual training as required by this Plan, should immediately do the following:

- Begin notification procedures specified in Section 6.1 by contacting the campus police (911).
- ***If possible and safe to do so:***
  - Block downstream storm drains using drains mats or absorbent to prevent discharge into drains;
  - Ensure that secondary containment drains are closed;
  - Stop flow or leak from source of spill;
  - Contain spill using absorbents;
  - Extinguish ignition sources in the vicinity of fuel oil and petroleum releases;
  - Maintain control of the site conditions and traffic until the Spill Response Team arrives.

5.2.2 Spill Response Activities

When a spill or leak is discovered or reported, the OESO Spill Response Team will immediately:

- Identify the source of the spill and take necessary actions to stop the release which may include bringing in outside assistance;
- Ensure that spills do not enter storm drains by blocking downstream drains with mats, loose absorbent, or absorbent booms;
- For a release from the tanks with secondary containment dikes, verify that the containment dike is functioning properly and is not leaking;
- Use adsorbent materials to "dike" or "dam" the spill. Priority is to be given to areas where a spill might enter floor drains, storm drains, or leave Duke University property;
- Begin clean–up: Every attempt will be made to vacuum up all free product. Use of vacuum trucks should be used to pick up and transport large quantities. Small quantities may be picked up with vacuum–fitted 55–gallon drums on wheels;
- Apply generous amounts of sorbent to the remaining products or liquid, then shovel up the material and place in either a clean drum (if small quantities), or other designated container, such as a roll–off bin (if large quantities);

- In the event that products have spilled onto soil, all contaminated soil will be excavated and put into a drum or other designated container. If the spill generates large quantities of waste that cannot be controlled by the OESO Spill Response Team, then the SPCC Coordinator will immediately notify one of the following contractors:

Big John's Towing & Recovery
1320 Camden Avenue
Durham, NC 27701
24 Hours: (919) 682-2469
Alternate Phone: (919) 477-2666

Shamrock Environmental Corporation
6106 Corporate Park Drive
Browns Summit, NC 27214
24 Hours: (800) 881-1098
Phone: (336) 375-1989
Fax: (336) 375-1801

A&D Environmental Services, Inc.
3149 Lear Drive
Burlington, North Carolina 27215
24 Hours: (800) 434-7750
Phone: (336) 229-0058
Fax: (336) 229-0204

5.2.3 Post Response Activities

- Sorbent materials, contaminated soils, and other cleanup items will be stored in labeled containers in designated areas until final disposal. Liquids and contaminated solids will be hauled by certified waste transporters to appropriate processing, treatment, and disposal facilities. Disposal of waste will be coordinated and approved by the Duke University OESO.

- All response equipment will be properly decontaminated or disposed and replaced or restocked as required to maintain adequate spill response materials.

- The SPCC Coordinator or Spill Response Team Coordinator will be responsible for notifying the appropriate agencies identified in Section 6.2.

- The cause of the spill or leak will be determined and repairs or modifications made as necessary to prevent similar incidents from occurring in the future. This includes modifying procedures and this Plan to prevent reoccurrence.

5.2.4 Tanker Unloading/Loading & Overfilling

Overfilling of large diesel ASTs or USTs, hose rupture, or premature tanker departure can result in the release of a large quantity of oil. Upon detection of a release beyond portable secondary containment, **IMMEDIATELY STOP FILLING THE TANK and shut off all valves.** Place absorbent booms and materials to contain the release in the smallest possible area. Seal nearby storm drains with drain sealing mats or use absorbent to build a barrier around the drain. Ensure that the release does not migrate into waterways or nearby storm drains.

Immediately begin emergency efforts outlined in Section 5.2.1

SECTION 6.0
NOTIFICATION OF SPILL EVENTS

This Section contains information for reporting of releases from Duke University.

6.1 ON–CAMPUS NOTIFICATION

In the event of a petroleum product spill, the ***Campus Police shall be notified immediately by dialing 911 (or 684–2444 from a cellular phone).*** The Campus Police shall notify one of the following people in the order given, as specified in the Notification Protocol (Appendix 6):

NAME	POSITION/ LOCATION	OFFICE PHONE	HOME NUMBER	CELL PHONE
Spill Response Team	Spill Response Coordinator	919-684–2794	NA	919-417–0263 (After hours, weekends, & holidays)
Mike Snyder	Safety Manager FMD	919–660–4231		919–606-6693 (cell)
Jessica Keith	Safety & Health Specialist	919-613–9688		919-884–9282 (cell)
Gary Tencer	Assistant Director OESO	919-684–5996		919-812–5907 (cell)
Wayne Thomann	Director, OESO	919-684–6320	919-383–9333	919-970–1607

NOTE: Campus Police will be responsible for contacting the above listed persons at their homes when necessary.

6.2 REGULATORY AGENCY NOTIFICATION

Releases that meet the following requirements must be reported to the appropriate agencies.

All Oil Releases That:

- **Enter Any Waterways**
- **Are Within 100 Feet Of Any Water Body**
- **Cannot Be Cleaned Up Within 24 Hours, Or**
- **Releases To The Ground >25 Gallons**

All Chemical Releases That:

- **Migrate Beyond Company Property Or**
- **Exceed The Reportable Quantity (RQ)**

The SPCC Coordinator, or in his/her absence the Director of Environmental Programs, will notify the agencies listed below as appropriate, giving as much of the following information as is known:

- Give name of person reporting, job title, and telephone number where you can be reached;
- Give the company name, address, and phone number;
- Describe the spill incident and its location;
- Report the presence of fire, if any;
- Report what hazardous materials are involved;
- Report number of persons injured, exposed, or contaminated, and number of persons subject to potential exposure, if any;
- Describe the weather (temperature, precipitation, windspeed, and direction);
- Report if any stream or waterway is nearby and if any contamination has occurred;
- Report when personnel and equipment are at the scene and what corrective measures are underway;
- Give your opinion on the seriousness of the incident, a) minor incident, b) serious but under control, c) need assistance.

Reportable spills must be reported to the following agencies.

North Carolina Department of Environment & Natural Resources & Emergency Management 24–Hr Emergency Response	**(800) 858–0368**
National Response Center (U.S. Coast Guard)	**(800) 424–8802**
Durham County LEPC	**(919) 560–0660**
City of Durham Stormwater Services	**(919) 560–4326**

6.3 RELEASES TO THE SANITARY SEWER

All significant oil and chemical releases to the sanitary sewer system should be reported immediately to:

City of Durham Wastewater Treatment Plant (919) 560–4388

6.4 WRITTEN REPORTING

Oil releases >1,000 gallons or two discharges of "Harmful Quantities" within a twelve month period require written reporting within 60 days to:

USEPA – Region IV
Waste Management Division
Engineering Response Section
345 Courtland Street, NE
Atlanta, GA 30365

The report must include the following information:

1. Name of the facility;
2. Name of the owner or operator of the facility;
3. Location of the facility;
4. Maximum storage or handling capacity of the facility and normal daily throughput;
5. Description of the facility, including maps, flow diagrams and topographical maps;
6. The cause(s) of the spill, including a failure analysis of the system or subsystem in which the failure occurred;
7. The corrective actions and/or countermeasures taken, including an adequate description of equipment repairs and/or replacement;
8. Additional preventative measures taken or contemplated to minimize the possibility of reoccurrence;
9. Other information that the EPA Regional Administrator may require.

SECTION 7.0
INSPECTIONS & TESTING

This Section addresses routine equipment checks, formal inspections, and testing of tanks, piping and equipment.

7.1 ROUTINE EQUIPMENT CHECKS

An employee familiar with the facility tanks and their operation makes the following daily checks of major oil storage and handling facilities as part of routine observations or preventive maintenance procedures:

- Check portable and stationary secondary containment for damage and integrity (will not leak);
- Check tanks, foundations and supports for obvious signs of leakage, distortion or other damage;
- Check piping systems, particularly at connections for obvious signs of leakage.

Employees are not required to maintain records of these daily observations. In the event that a problem is observed it must be reported immediately to the SPCC Coordinator for further investigation.

7.2 FORMAL INSPECTIONS

A SPCC inspection program has been designed to insure continued integrity of all oil storage and handling equipment. The program has been developed based on site and equipment conditions, equipment manufacturers' recommendations and the following industry standards:

- SP001 – Steel Tank Institute Standard for the Inspection of Aboveground Storage Tanks
- NFPA SP 30 – Flammable and Combustible Liquid Code
- API 653 – Tank Inspection, Repair, Alteration and Reconstruction
- API 575 – Inspection of Atmospheric & Low Pressure Tanks

Inspection of all oil and used oil storage areas are conducted quarterly and/or annually in accordance with the schedule and requirements included in Appendix 2. Records of inspections are signed by the inspector and maintained for at least three (3) years. If a problem is detected during a formal inspection, the SPCC Coordinator will be notified immediately.

7.2.1 Monthly Inspections

Monthly inspections are conducted for disconnected transformer storage at the West Campus Chiller Plant as long as existing temporary storage measures are utilized. Monthly inspections are documented using the form in Appendix 1.

7.2.2 Quarterly Inspections

Spill response supplies are checked on a quarterly basis to ensure that the supplies are adequate and all material is properly stored. In addition, all oil storage and transfer areas are inspected on a quarterly basis to ensure the following:

- Containers are in good condition and are overpacked if necessary;
- Containers are properly labeled;
- Containers are stored in appropriate locations identified in the SPCC Plan;
- Appropriate secondary containment is provided where required;
- Adequate space is maintained in storage areas for maneuvering of drums, handcarts, or forklifts, as appropriate;
- Spill Response & Cleanup Kits are adequately stocked and appropriately located;
- Procedures outlined in the SPCC Plan are adhered to;
- Piping systems, tanks, and transfer equipment are in good condition;
- Portable secondary containment is in good condition.

Repairs are made at the facilities as required. Quarterly inspections are documented using the form in Appendix 1. Records of such inspections and any associated repairs are kept with the master copy of the SPCC Plan by the SPCC Coordinator.

7.2.3 Annual Inspections

In addition to the quarterly inspection requirements listed above, the annual inspection includes the following general activities which are also recorded on the inspection checklist included in Appendix 1:

- Annual equipment inspection and maintenance requirements as described in the inspection checklist in Appendix 1.
- Confirm that SPCC procedures are being followed and that they are adequate for the Duke University campus.
- Ensure that the Duke University campus maintains the capability to respond to releases.
- Ensure that records are being retained as described in Section 9.0.

7.3 TESTING

In addition to regular inspections, Duke University will conduct tank and piping integrity testing and internal tank inspections as described in Section 7.3.1 through 7.3.3 and Table 2. This testing program has been developed based on the likelihood and consequences of a release, equipment manufacturer recommendations and a review of the industry standards listed in Section 7.2.

Integrity testing and internal inspections will be conducted by an inspector who is authorized to perform the relevant test (see Table 2). A signed report with recommendations will be submitted by the testing agent to the Duke University Facilities and Maintenance Department following test completion. The report will be retained for the life of the tank.

The test results will then be reviewed by the SPCC Coordinator and an engineer familiar with the tank history and operations to determine subseq191009uent testing requirements or necessary repairs. If the SPCC Coordinator and the engineer specify a subsequent testing or repair program that differs from that recommended by the authorized testing agent, they will document the reasons, sign the documentation, and retain it for the life of the tank.

7.3.1 Integrity Testing

Table 2 contains the testing and the minimum testing frequency that is required for each tank or piping system to ensure continued integrity of the oil storage and handling facilities.

7.3.2 Testing Repaired or Reconstructed Tanks and Piping

All tanks and piping that have been repaired or reconstructed should undergo pressure testing prior to being placed back in service. Pressure testing must be conducted by an authorized inspector in accordance with the following industry standards unless alternative procedures are documented, signed and retained for the life of the tank or piping:

- STI Recommended Practice 892–91 "Recommended Practice for Corrosion Protection of Underground Piping Networks Associated with Liquid Storage and Dispensing Systems"
- API 653 – Tank Inspection, Repair, Alteration and Reconstruction
- API 575 – Inspection of Atmospheric & Low Pressure Tanks
- API 570 – Piping Inspection Code
- API 574 – Inspection Practices for Piping System Components

The SPCC regulations specifically require that field constructed tanks undergo testing for brittle fracture whenever repairs are made or there is a change in service. In addition to the above listed standards, also consult API Recommended Practice 920 "Prevention of Brittle Fracture of Pressure Vessels".

TABLE 2: TANK AND PIPE TESTING GUIDELINES (General)

SOURCE	TANK TYPE	VISUAL MONITORING** (Frequency)	CHECK INTERSTICE FOR FUEL & WATER (Frequency)	VERIFY PROPER OPERATION OF LEAK DETECTION SYSTEM (Frequency)	PRESSURE TIGHTNESS TEST WITH INERT GAS (Frequency)	METAL LOSS TESTING OR OTHER NDE* (Frequency)
Double-wall; outer shell NOT in contact with support surface & tank bottom visible	Double-wall; outer shell NOT in contact with support surface & tank bottom visible	YES (Quarterly)	YES (Quarterly)	YES - If equipped. (Quarterly)	NOT REQUIRED	NOT REQUIRED
Double-wall; outer shell NOT in contact with support surface & tank bottom NOT visible	Double-wall; outer shell NOT in contact with support surface & tank bottom NOT visible	YES (Quarterly)	YES (Quarterly)	YES - If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED
Double-wall; outer shell in contact with support surface	Double-wall; outer shell in contact with support surface	YES (Quarterly)	YES (Quarterly)	YES - If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED
Single-wall; tank bottom NOT in contact with support surface and is visible	Single-wall; tank bottom NOT in contact with support surface and is visible	YES (Quarterly)	NA	YES - If equipped. (Quarterly)	NOT REQUIRED	NOT REQUIRED
Single-wall; tank bottom NOT in contact with support surface and NOT visible	Single-wall; tank bottom NOT in contact with support surface and NOT visible	YES (Quarterly)	NA	YES - If equipped. (Quarterly)	YES (Every 10 years)	YES (Every 10 years)
Single-wall; bottom in contact with support surface	Single-wall; bottom in contact with support surface	YES (Quarterly)	NA	YES - If equipped. (Quarterly)	YES (Every 10 years)	YES (Every 10 years)
Single-wall with false bottom (interstice)	Single-wall with false bottom (interstice)	YES (Quarterly)	NA	YES - If equipped. (Quarterly)	YES (Every 10 years)	YES (Every 10 years)
UST's	UST's	NA	YES (Per 40 CFR Part 280)	YES (Per 40 CFR Part 280)	Consult 40 CFR Part 280 for Test and Frequency. Required for cathodic protection systems.	Complete per 40 CFR Part 280 for cathodic protection systems.

* **NDE – Nondestructive Evaluation**

** **Depending on tank size and leak detection method, certified inspection may be required. Refer to Section 5.0 of STE – SP 00.**

TABLE 2: TANK AND PIPE TESTING GUIDELINES (Specific)

SOURCE	TANK TYPE	VISUAL MONITORING (Frequency)	CHECK INTERSTICE FOR FUEL & WATER (Frequency)	VERIFY PROPER OPERATION OF LEAK DETECTION SYSTEM (Frequency)	PRESSURE TIGHTNESS TEST WITH INERT GAS (Frequency)	METAL LOSS TESTING OR OTHER NDE* (Frequency)
(1) Cameron Indoor Stadium – 100-gal diesel AST	Double–wall; outer shell in contact with support surface	YES (Quarterly)	YES (Quarterly)	YES – If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED
(2) Jordan Building – 200-gal diesel AST	Double–wall; outer shell in contact with support surface	YES (Quarterly)	YES (Quarterly)	YES – If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED
(3) Teer Engineering – 500-gal diesel AST	Single–wall; outer shell in contact with support surface	YES (Quarterly)	YES (Quarterly)	YES – If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED
(4) Perkins Library – 620-gal diesel AST	Single–wall; tank bottom NOT in contact with support surface and is visible	YES (Quarterly)	NA	YES – If equipped. (Quarterly)	NOT REQUIRED	NOT REQUIRED
(5) Duke Gardens Maintenance – 250-gal gasoline AST	Single–wall; bottom in contact with support surface	YES (Quarterly)	NA	YES – If equipped. (Quarterly)	YES (Every 10 years)	YES (Every 10 years)
Duke Gardens Maintenance – 150-gal diesel AST	Single–wall; bottom in contact with support surface	YES (Quarterly)	NA	YES – If equipped (Quarterly)	YES (Every 10 years)	YES (Every 10 years)
(6) Wilson Recreation – 500-gal diesel AST	Double–wall; outer shell in contact with support surface	YES (Quarterly)	YES (Quarterly)	YES – If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED
(7) Schwartz–Butters Building – 384-gal diesel AST	Double–wall; outer shell in contact with support surface	YES (Quarterly)	YES (Quarterly)	YES – If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED
(8) Gross Chemistry Building – 1,000-gal diesel AST	Double–wall; outer shell in contact with support surface	YES (Quarterly)	YES (Quarterly)	YES – If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED

TABLE 2: TANK AND PIPE TESTING GUIDELINES (Specific)

SOURCE	TANK TYPE	VISUAL MONITORING (Frequency)	CHECK INTERSTICE FOR FUEL & WATER (Frequency)	VERIFY PROPER OPERATION OF LEAK DETECTION SYSTEM (Frequency)	PRESSURE TIGHTNESS TEST WITH INERT GAS (Frequency)	METAL LOSS TESTING OR OTHER NDE* (Frequency)
(9) Physics Building – 55-gal drum	Single-wall; tank bottom NOT in contact with support surface and is visible	YES (Quarterly)	NA	YES - If equipped. (Quarterly)	NOT REQUIRED	NOT REQUIRED
(10) North Building – 200-gal diesel AST	Double–wall; outer shell in contact with support surface	YES (Quarterly)	YES (Quarterly)	YES – If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED
(11) Library Services Center – 100-gal & 187-gal diesel ASTs	Single–wall; bottom not in contact with support surface Double–wall; outer shell in contact with support surface	YES (Quarterly)	NA	YES – If equipped. (Quarterly)	YES (Every 10 years)	YES (Every 10 years)
(12) Fuqua Business School – 600- & 850-gal diesel ASTs	Double–wall; outer shell in contact with support surface	YES (Quarterly)	YES (Quarterly)	YES – If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED
(13) Public Policy Building – 200-gal diesel AST	Double–wall; outer shell in contact with support surface	YES (Quarterly)	YES (Quarterly)	YES – If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED
(14) Primate Center – 1,000-gal diesel AST	Double–wall; outer shell in contact with support surface	YES (Quarterly)	YES (Quarterly)	YES – If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED
(15) Duke Forest Maintenance – 500-gal gasoline AST	Single–wall; tank bottom NOT in contact with support surface and is visible	YES (Quarterly)	NA	YES – If equipped. (Quarterly)	NOT REQUIRED	NOT REQUIRED
Duke Forest Maintenance – 250-gal diesel AST	Single-wall; tank bottom NOT in contact with support surface and is visible	YES (Quarterly)	NA	YES – If equipped (Quarterly)	NOT REQUIRED	NOT REQUIRED
(16) Bryan Student Center – 1,000-gal diesel AST	Single–wall; bottom in contact with support surface	YES (Quarterly)	NA	YES – If equipped. (Quarterly)	YES (Every 10 years)	YES (Every 10 years)

TABLE 2: TANK AND PIPE TESTING GUIDELINES (Specific)

SOURCE	TANK TYPE	VISUAL MONITORING (Frequency)	CHECK INTERSTICE FOR FUEL & WATER (Frequency)	VERIFY PROPER OPERATION OF LEAK DETECTION SYSTEM (Frequency)	PRESSURE TIGHTNESS TEST WITH INERT GAS (Frequency)	METAL LOSS TESTING OR OTHER NDE* (Frequency)
(17) LSRC 500-gal Diesel AST	Double–wall; outer shell NOT in contact with support surface & tank bottom NOT visible	YES (Quarterly)	YES (Quarterly)	YES – If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED
LSRC 1000-gal Diesel AST Remote Tank	Double–wall; outer shell NOT in contact with support surface & tank bottom NOT visible	YES (Quarterly)	YES (Quarterly)	YES – If equipped (Quarterly)	YES (Every 10 Years)	NOT REQUIRED
(18) West Campus Grounds – 500-gal diesel	Single–wall; bottom in contact with support surface	YES (Quarterly)	NA	YES – If equipped. (Quarterly)	YES (Every 10 years)	YES (Every 10 years)
West Campus Grounds 500-gal gasoline AST	Single–wall; bottom in contact with support surface	YES (Quarterly)	NA	YES – If equipped (Quarterly)	YES (Every 10 Years)	YES (Every 10 Years)
West Campus Grounds 100-gal used oil AST	Single–wall; bottom in contact support surface	YES (Quarterly)	NA	YES – If equipped (Quarterly)	YES (Every 10 Years)	YES (Every 10 Years)
(19) Washington Duke Inn 250-gal diesel AST	Double–wall; outer shell in contact with support surface	YES (Quarterly)	YES (Quarterly)	YES – If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED
(20) CIEMAS 1,000-gal diesel AST	Double–wall; outer shell in contact with support surface	YES (Quarterly)	YES (Quarterly)	YES – If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED
(21) Divinity School Addition 194-gal diesel AST	Double–wall; outer shell in contact with support surface	YES (Quarterly)	YES (Quarterly)	YES – If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED

TABLE 2: TANK AND PIPE TESTING GUIDELINES (Specific)

SOURCE	TANK TYPE	VISUAL MONITORING (Frequency)	CHECK INTERSTICE FOR FUEL & WATER (Frequency)	VERIFY PROPER OPERATION OF LEAK DETECTION SYSTEM (Frequency)	PRESSURE TIGHTNESS TEST WITH INERT GAS (Frequency)	METAL LOSS TESTING OR OTHER NDE* (Frequency)
(22) Environmental Hall 100-gal	REMOVED					
(23) East Campus Equipment Room – 400-gal diesel AST	Double–wall; outer shell in contact with support surface	YES (Quarterly)	YES (Quarterly)	YES – If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED
(24) WEL Dorm 1000-gal diesel	Double–wall; outer shell in contact with support surface	YES (Quarterly)	YES (Quarterly)	YES – If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED
(25) Rubenstein Hall 150-gal diesel AST	Double–wall; outer shell in contact with support surface	YES (Quarterly)	YES (Quarterly)	YES – If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED
(26) French Science Center 1,500-gal diesel AST	Double–wall; outer shell in contact with support surface	YES (Quarterly)	YES (Quarterly)	YES – If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED
(27) Nocturnal Lab (Primate Center) 500-gal diesel AST	Double–wall; outer shell in contact with support surface	YES (Quarterly)	YES (Quarterly)	YES – If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED
(28) Center for Athletic Excellence 175-gal diesel AST	Double–wall; outer shell in contact with support surface	YES (Quarterly)	YES (Quarterly)	YES – If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED
(29) East Campus Science Bldg. 350-gal diesel AST	Double–wall; outer shell in contact with support surface	YES (Quarterly)	YES (Quarterly)	YES – If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED
(30) Finch-Yeager Bldg. 40-gal diesel AST	Double–wall; outer wall in contact with support surface	YES (Quarterly)	NA	YES – If equipped. (Quarterly)	YES (Every 10 years)	YES (Every 10 years)
(33) West Campus Chiller Plant #2 Four (4) 10,000-gal diesel ASTs	Double–wall; outer shell (frame) in contact with support surface	YES (Quarterly)	YES (Quarterly)	YES – If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED

TABLE 2: TANK AND PIPE TESTING GUIDELINES (Specific)

SOURCE	TANK TYPE	VISUAL MONITORING (Frequency)	CHECK INTERSTICE FOR FUEL & WATER (Frequency)	VERIFY PROPER OPERATION OF LEAK DETECTION SYSTEM (Frequency)	PRESSURE TIGHTNESS TEST WITH INERT GAS (Frequency)	METAL LOSS TESTING OR OTHER NDE* (Frequency)
(34) West Campus Chiller Plant #1 One (1) 10,000–gal Diesel AST	Double–wall; outer shell (frame) in contact with support surface	YES (Quarterly)	YES (Quarterly)	YES – If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED
(35) East Campus Steam Plant 1200–gallon	Double-wall; outer shell in contact with support surface	YES (Quarterly)	YES (Quarterly)	YES – If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED
(36) Duke University Golf Course (2) 500–gallon (2) 55–gallon	Double-wall; outer shell NOT in contact with support surface & tank bottom NOT visible.	YES (Quarterly)	YES (Quarterly)	YES – If equipped. (Quarterly)	YES (Every 10 years)	NOT REQUIRED
	Single-wall; tank bottom NOT in contact with support surface and is visible				NOT REQUIRED	
(37) Trent Drive Building 55–gallon	Single-wall; tank bottom NOT in contact with support surface and is visible	YES (Quarterly)	NA	YES – If equipped. (Quarterly)	NOT REQUIRED	NOT REQUIRED
(38) R.D. Thomas Building 300–gallon	Single-wall; tank bottom NOT in contact with support surface and is visible	YES (Quarterly)	NA	YES – If equipped. (Quarterly)	NOT REQUIRED	NOT REQUIRED
(39) Baldwin Auditorium 165–gallon	Double-wall; tank bottom in contact with support surface and is visible	YES (Quarterly)	NA	YES – If equipped. (Quarterly)	NOT REQUIRED	NOT REQUIRED
(42) Triangle University Nuclear Lab (TUNL) 55–gallon	Single-wall; tank bottom NOT in contact with support surface and is visible	YES (Quarterly)	NA	YES – If equipped. (Quarterly)	NOT REQUIRED	NOT REQUIRED

TABLE 2 (continued): TANK AND PIPE TESTING STANDARDS

TEST AREA	STANDARD	TEST METHOD REQUIRED/RECOMMENDED	FREQUENCY
Exterior Tank	API 653	Visual Inspection – Authorized Inspector	Every 5 years by authorized inspector or at rate determined based on shell thickness and corrosion rate (see API 653 Section 6.3.2).
Exterior Tank	API 653	Thickness/ corrosion rate testing. Typically use ultrasonic testing but other methods (radiography, or other non–destructive test methods) approved by authorized inspector are permitted.	If corrosion rate is not known – every 5 years (corrosion rate can be estimated from similar tanks in similar service). If corrosion rate is known – frequency is determined by corrosion rate & shell thickness but cannot exceed every 15 years (6.3.3.2).
Interior Tank	API 653	Internal Inspections – Must be performed by authorized inspector using method of his discretion. Alternative – For in–service tanks where only bottom thickness measurements are required– may use ultrasonic robotic methods together with electromagnetic methods. Methods must be adequate to determine thickness, corrosion rate and integrity of the bottom. Alternative – Risk Based Assessment (RBA) to determine internal inspection frequency	Frequency calculated by authorized inspector based on corrosion rate (typically bottom corrosion rate) and bottom plate thickness but not to exceed every 20 years. (Note: corrosion rates can be calculated based on similar tanks in similar service.) If corrosion rates are unavailable and bottom thickness cannot be determined – internal inspection required within 10 years but most likely will be required sooner by certified inspector. RBA can be used to determine internal inspection frequency. Must be reviewed and approved by authorized inspector and engineer and re–approved every 10 years. Must be fully documented. See 6.4.3.

TABLE 2 (continued): TANK AND PIPE TESTING STANDARDS

TEST AREA	STANDARD	TEST METHOD REQUIRED/RECOMMENDED	FREQUENCY
All double wall tanks (including tanks with a double bottom)	SP–001	Verify that the leak detector equipment is operating if the tank is so equipped.	10 years, minimum or as recommended by manufacturer
Repaired Tanks and New Systems	API 653/ SP–001	Hydrostatic Pressure Test	Test hydrostatically unless alternative is approved in writing by engineer and authorized by owner/ operator. The tank must be re–inspected by a certified inspector after repairs are completed and 5 years thereafter or more frequently if recommended by the inspector. Similarly, the tank must be re–inspected in 5 years if the inspector determines that tank thickness is less than 75% of the original.

NOTE: Visual inspection of a petroleum storage tank that is not in contact with the ground (bottom of tank can be visually inspected) and is equipped with secondary containment, is adequate for integrity testing when combined with pressure testing for tightness every 10 years.

**NDE – NON–DESTRUCTIVE EVALUATION*

PIPE TESTING:

If a leak from the piping will be contained (ex. double–wall pipe or pipe jacket and/or leak routed to secondary containment), integrity and leak testing is not required.

If a leak from the piping will NOT be contained, conduct a pressure test every 3 years with liquid to 10% above maximum operating pressure. Per API 570, test is for 8 hours duration. Four hours after initial pressurization, re–establish test pressure and isolate from pressure source. If, over the remaining four hours, the pressure drop is equal to or less than 5%, test is considered a PASS.

SECTION 8.0
PLAN REVIEW AND AMENDMENT

The SPCC Plan must be reviewed by a Professional Engineer at least every 5 years or whenever there is a technical change in facility design, construction, operation or maintenance that has the potential to impact the quantity or nature of a discharge. Technical changes include most changes other than those that are administrative in nature. The Plan must be amended no later than 6 months after the modifications have been made and be fully implemented within 6 months from the date the Plan was amended.

If Duke University identifies any more effective prevention or control procedures as part of the 5–year review, or other necessary updates, the Plan must be amended within 6 months of the review and the changes fully implemented within 6 months of the amendment.

For every review, the certification contained in Appendix 2 must be signed and filed with the SPCC Plan. A record of the revisions is included in Appendix 2 of this Plan.

SECTION 9.0
RECORDKEEPING

The following records and procedures must be signed, dated, and retained at Duke University for a minimum of three years:

- Inspection and testing procedures that are developed by the PE certifying the Plan;
- Records of scheduled inspections and any corrective actions taken;
- Equipment maintenance records;
- Records of visual inspection of discharges from diked containment area;
- Records of employee training and annual briefings.

The following records must be retained for the life of the tank, piping or ancillary system:

- Records of design, construction, alteration, or repair of the tank and tank system;
- System installation drawings and specifications;
- Records of integrity and leak testing (including records from authorized inspectors and any recommendations from the facility manager and an engineer familiar with the equipment);
- Records pertaining to testing of fail–safe equipment including alarms and gauges.

SECTION 10.0
TRAINING

The SPCC Coordinator shall see that all operating and maintenance personnel involved in the storage and handling of petroleum receive instructions on the following:

A. Operation and maintenance of equipment to minimize risk of equipment failure and subsequent release.

B. Good Housekeeping Practices which ensure a clean, safe workplace and minimize the risk of spills and leaks.

C. Location and use of all spill control materials and equipment.

D. Spill prevention and response procedures.

E. Emergency notification procedures.

The persons designated accountable for spill prevention and response shall be briefed at regular intervals to assure an adequate understanding of this SPCC Plan. Such briefings shall highlight and describe known spill events or failures, malfunctioning components, and recently developed precautionary measures. Spill response equipment and procedures will be reviewed. In addition, spill prevention measures identified in this plan shall be reviewed.

Training and briefings shall be held at least once a year, or more frequently if a spill occurs or inspections reveal inadequacies in implantation of this plan. Records will be maintained on all briefings and training.

Records of the training are kept in the OESO database (environmental files) for a minimum of three years (Appendix 3).

SECTION 11.0
SECURITY AND LIGHTING

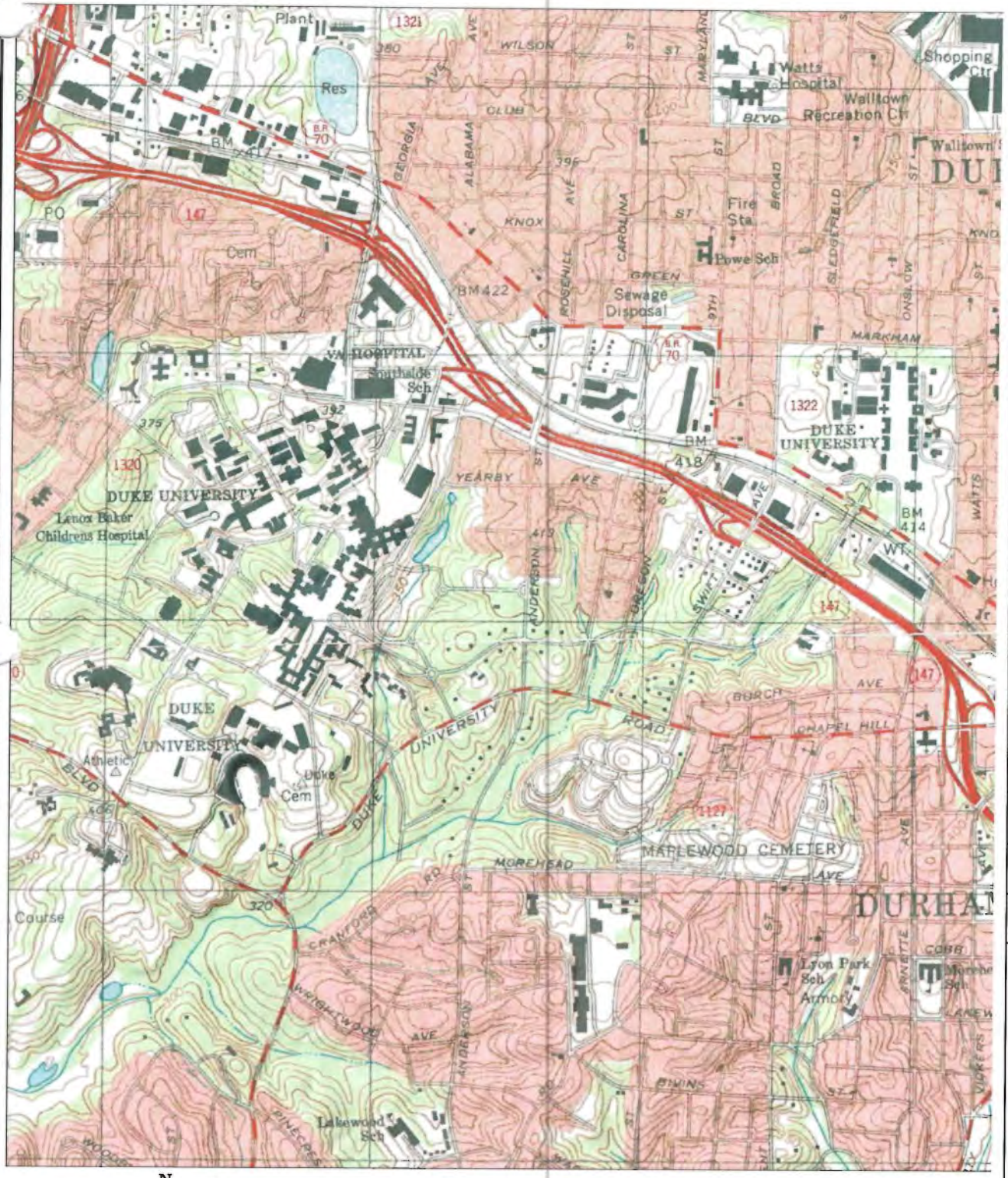
The following security procedures are in place to ensure that access to the storage areas is controlled and storage areas are monitored at all times:

- All aboveground and underground storage tank fill caps/connections and secondary containment drain valves are locked to prevent tampering.
- Duke University Campus Police are on duty 24 hours a day to provide total facility security and rapid response to incidents involving petroleum storage facilities. Duke University Campus Police routinely patrol the entire campus seven days a week.
- Any aboveground petroleum storage tank drain valve that will permit the direct outward flow of a tank's content to the surface is securely locked in the closed position or plugged.
- All aboveground secondary containment is constructed in a manner that will not allow accidental discharge of any liquids from within the containment structure. Containment drains are capped and locked.
- Lighting for all Duke University petroleum storage areas is adequate for identifying spills during any hours of the day or night.
- Vehicular traffic is restricted in the vicinity of storage areas and all tanker unloading operations are supervised.
- All aboveground petroleum storage tanks are fenced or inside a structure for security.

SECTION 12.0
CROSS REFERENCE TO 40 CFR PART 112

This SPCC Plan addresses all applicable sections of the SPCC regulations (40 CFR, Part 112, July 17, 2002). Appendix 4 includes a table which cross–references provisions of the SPCC regulations to sections of the SPCC Plan as required under 112.7.

FIGURES



BENSINGER & GARRISON ENVIRONMENTAL, INC.
Bluefield Engineering, P.C.

PROJECT:	218013
DATE:	June, 2015
DRAWN BY:	SRG
APPROVED BY:	JHG
FILE:	218013 SPCC
SCALE:	As Shown
NOTES:	

FIGURE 1: SITE LOCATION MAP
Duke University

Various Locations
Durham, Durham County, North Carolina

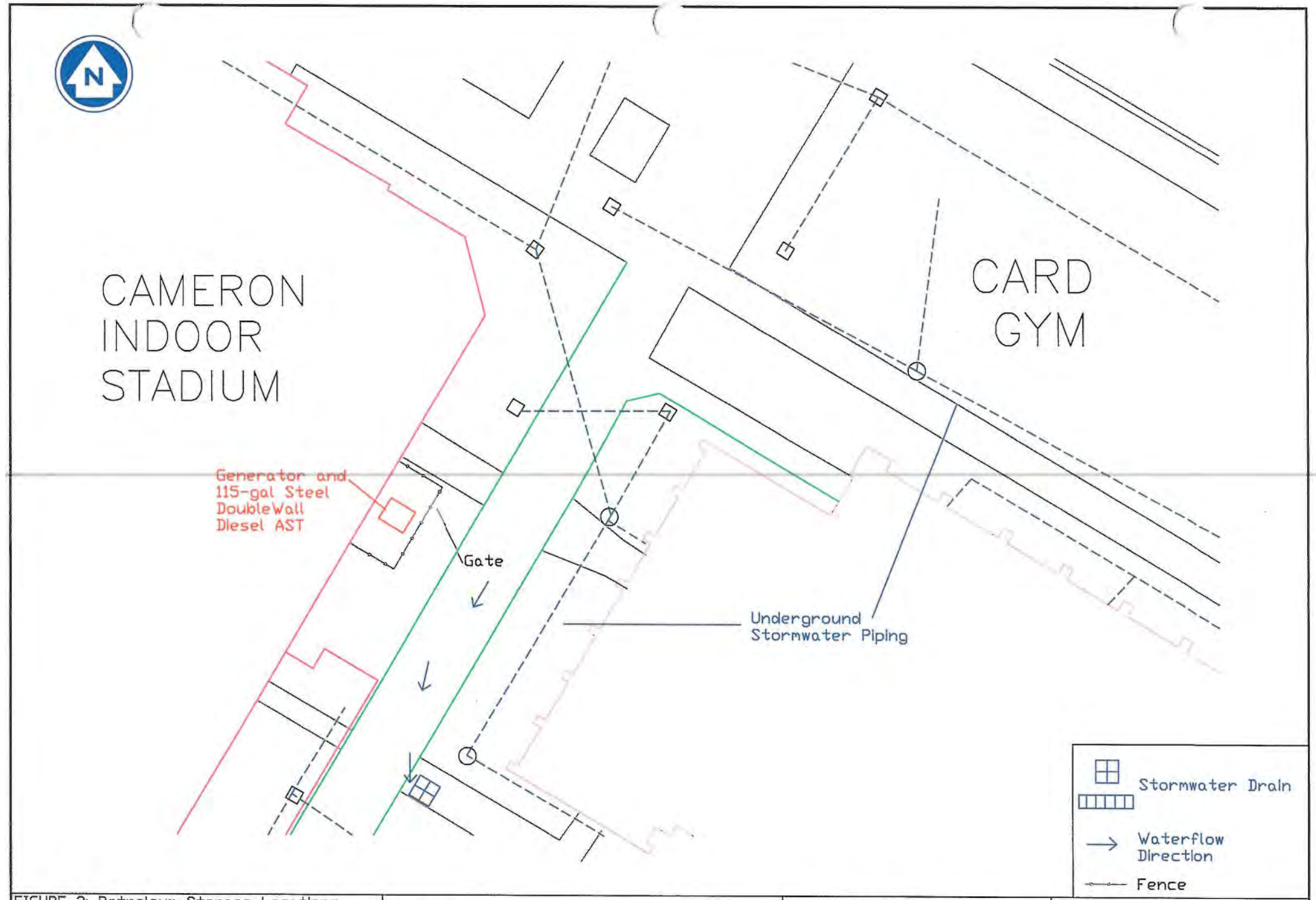


FIGURE 3: Petroleum Storage Locations

Cameron Indoor Stadium (7743)
East Side
Duke University
Durham, North Carolina

BENSINGER & GARRISON
ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 3

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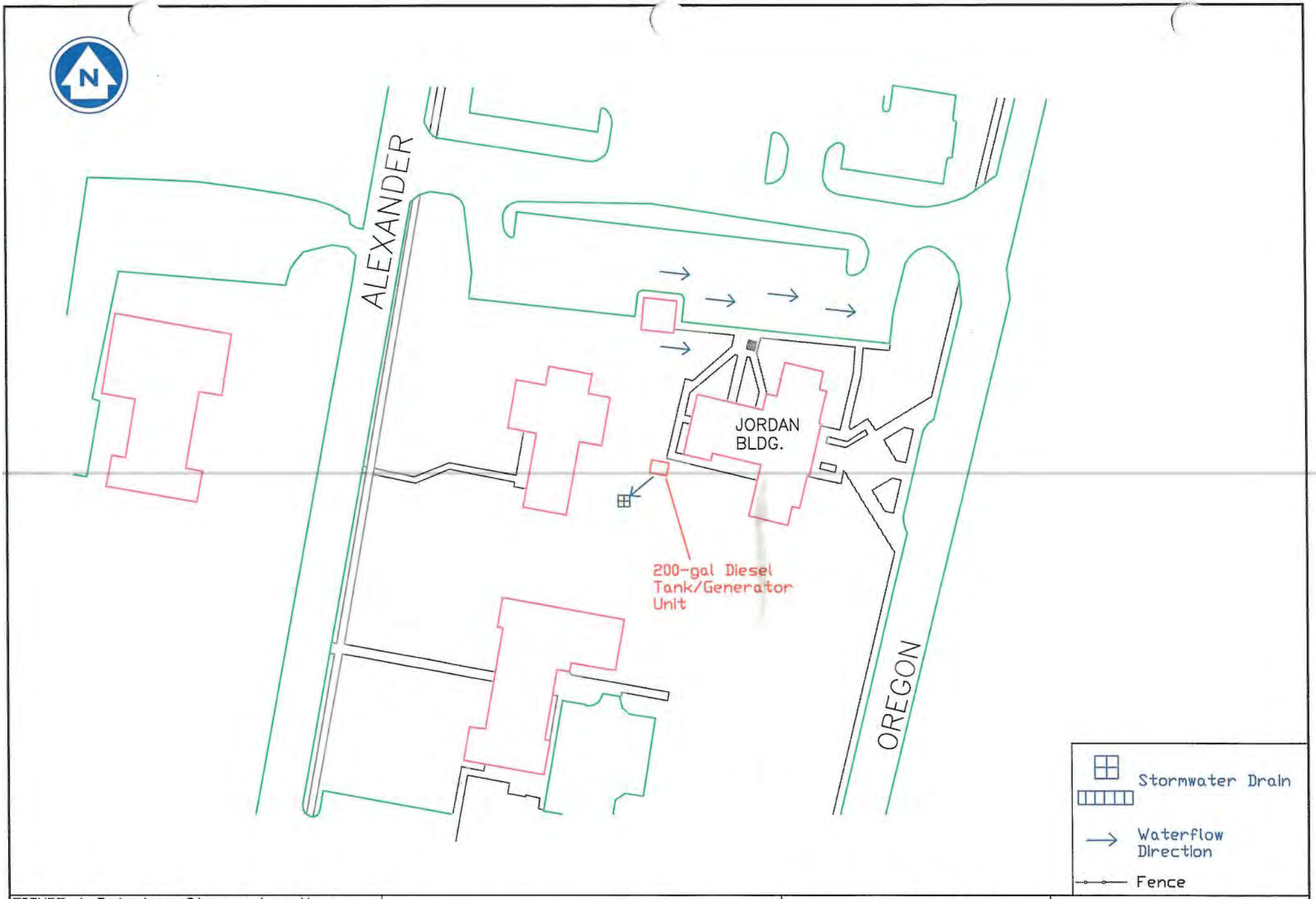

FIGURE 4: Petroleum Storage Locations

Jordan Building (7196)
South West Side
Duke University
Durham, North Carolina

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DATE: May, 2015
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FILE: DU Fig 4

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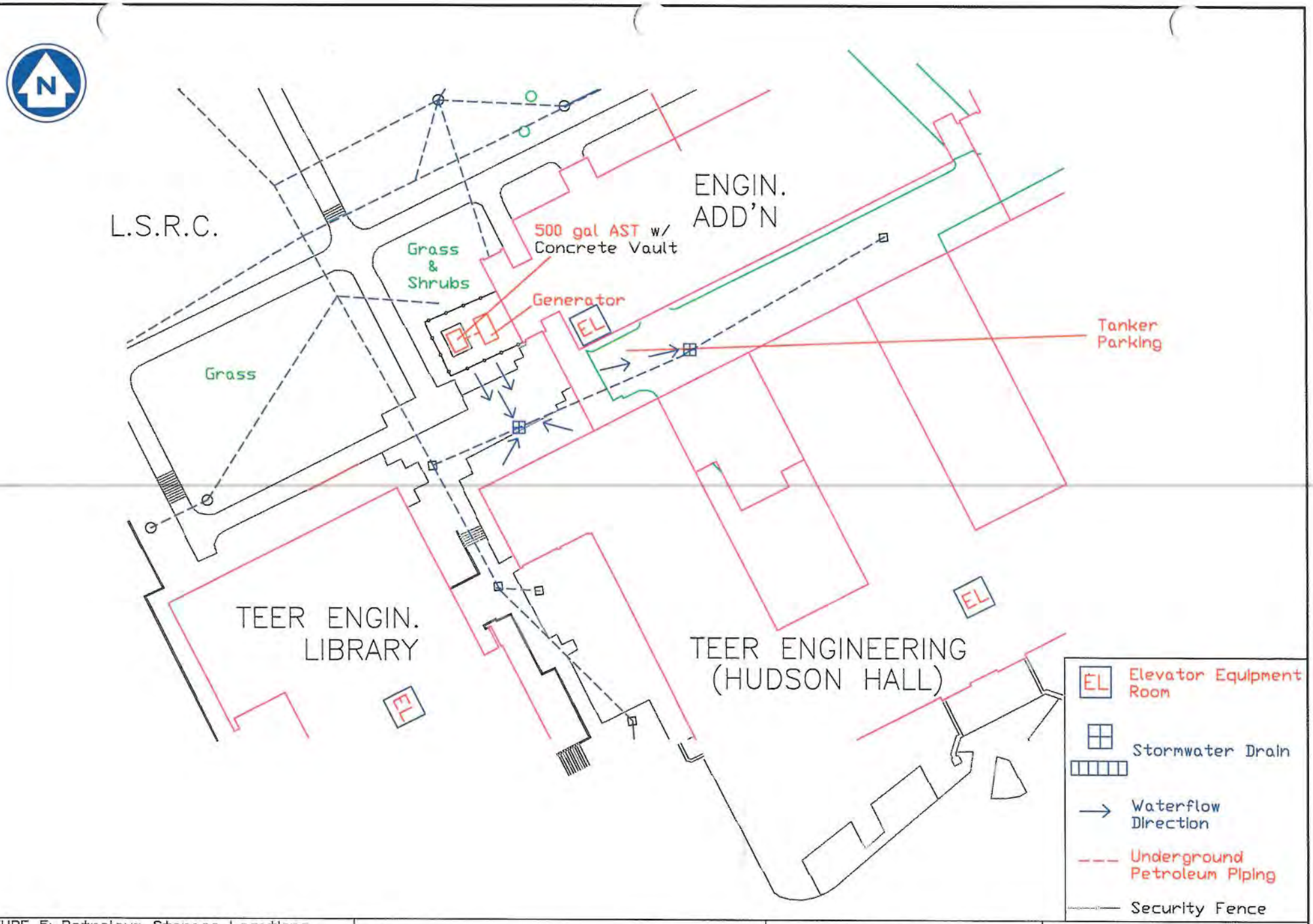

FIGURE 5: Petroleum Storage Locations

Teer Engineering Library (7766) &
Hudson Hall (7747)
Duke University
Durham, North Carolina

BENSINGER & GARRISON
ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
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APPROVED BY: JHG
FILE: DU Fig 5

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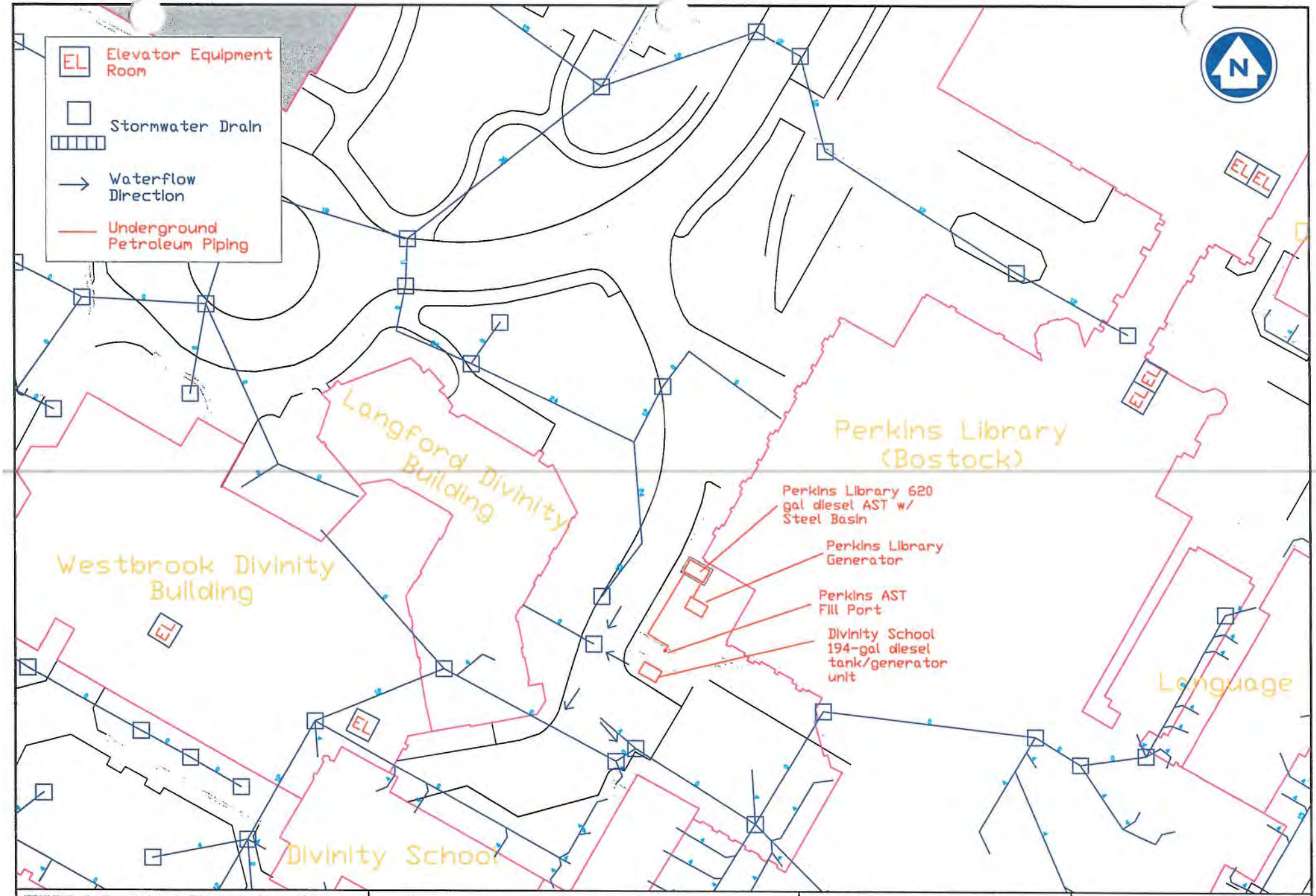

FIGURE 6: Petroleum Storage Locations

Perkins Library (7704) &
Westbrook Divinity School (7708)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
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DATE: May, 2015
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APPROVED BY: JHG
FILE: DU Fig 6

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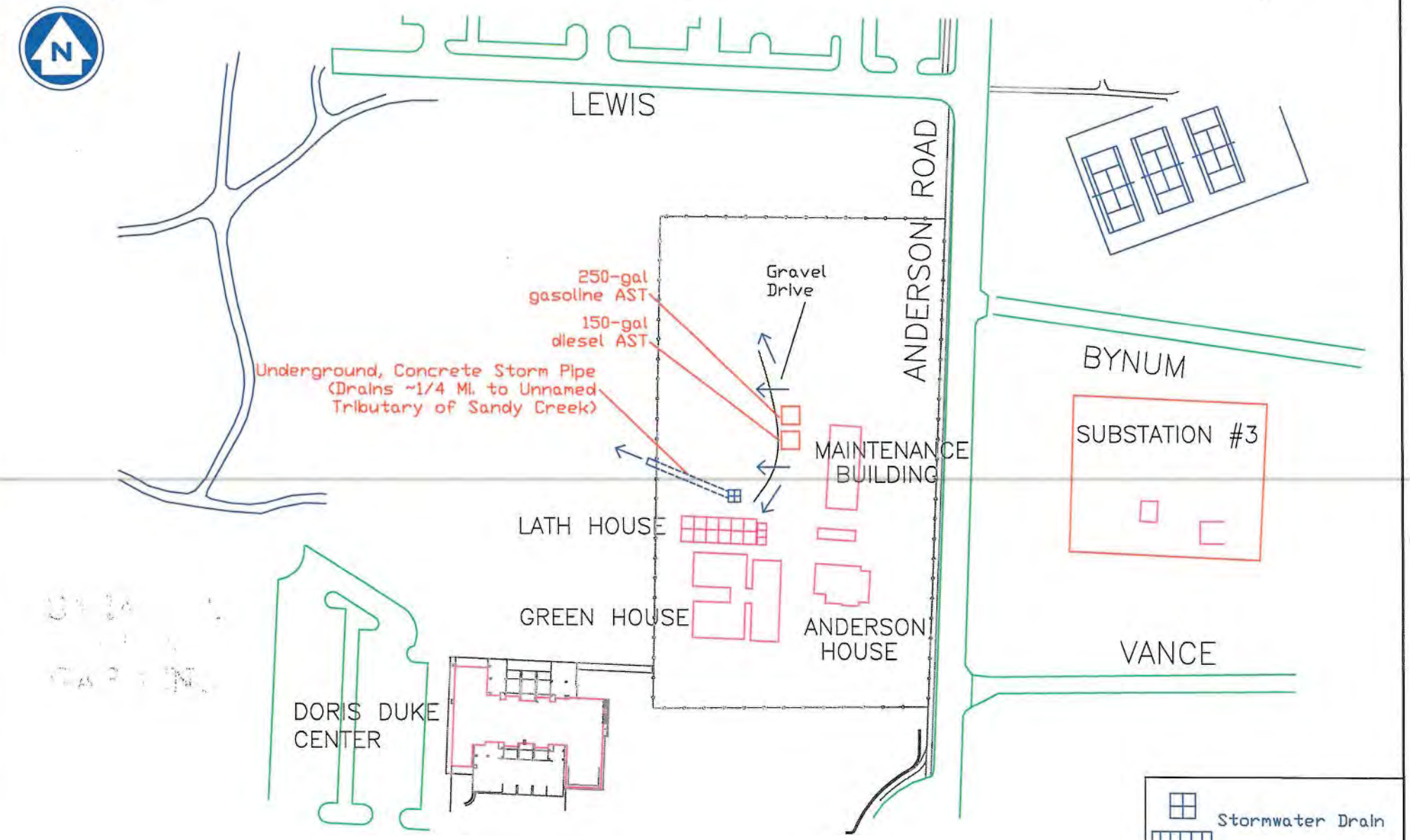

FIGURE 7: Petroleum Storage Locations

Duke Gardens Maintenance
North West Side of Maintenance Bldgs.
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
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APPROVED BY: JHG
FILE: DU Fig 7

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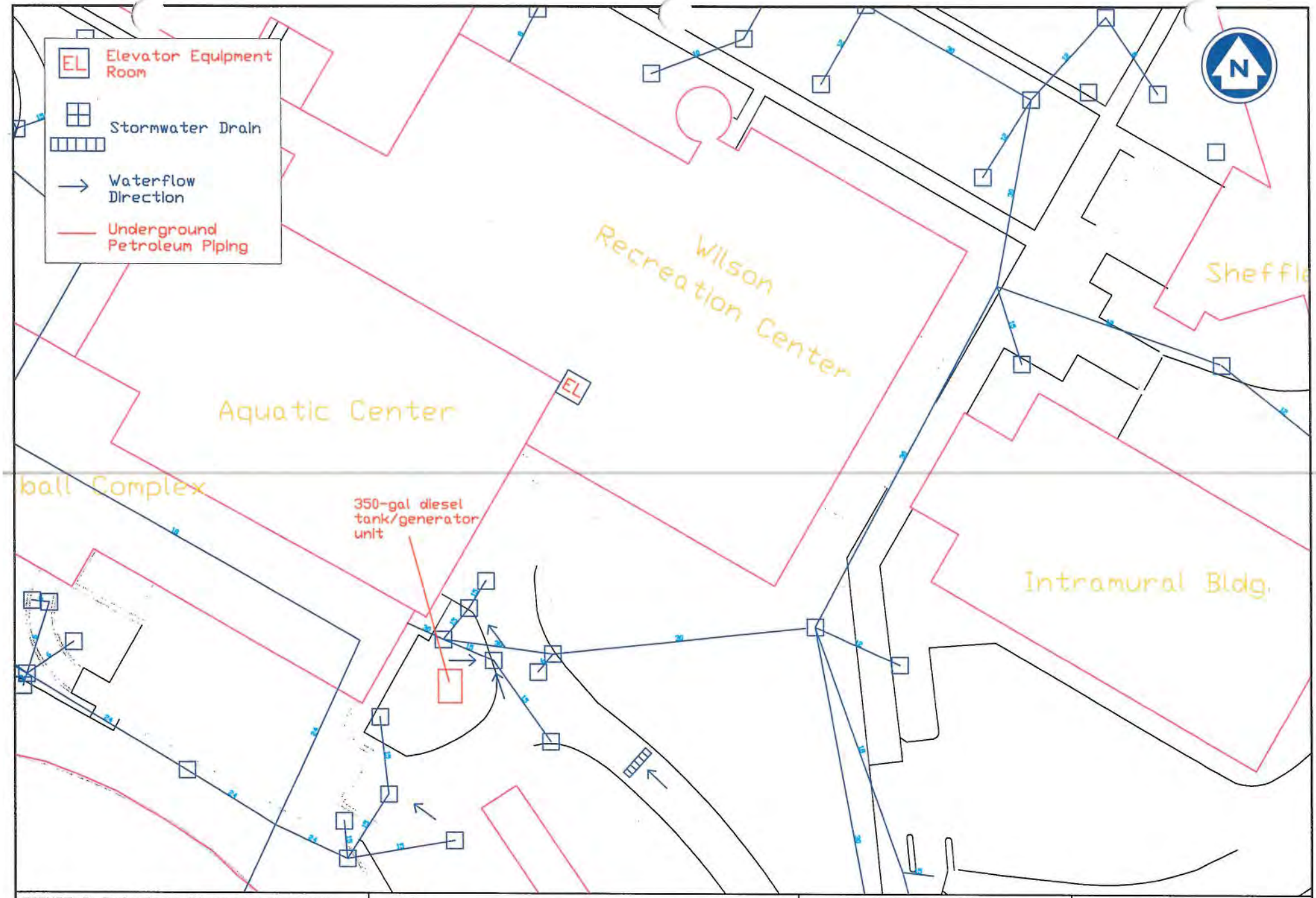

FIGURE 8: Petroleum Storage Locations

Wilson Recreation Center (7777)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
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FILE: DU Fig 8

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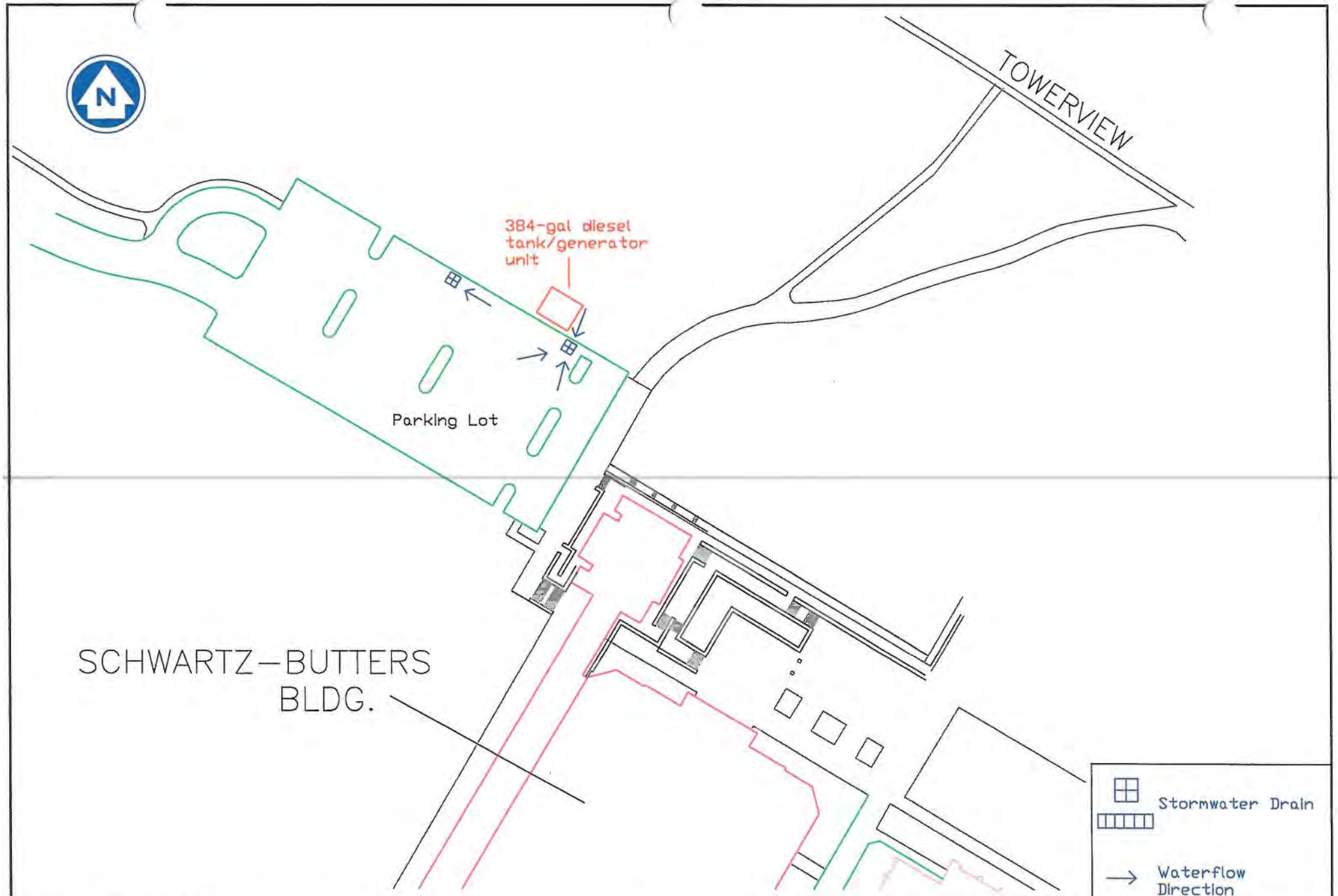

FIGURE 9: Petroleum Storage Locations

Schwartz-Butters Building (7741)
North West Side
Duke University
Durham, North Carolina

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FILE: DU Fig 9

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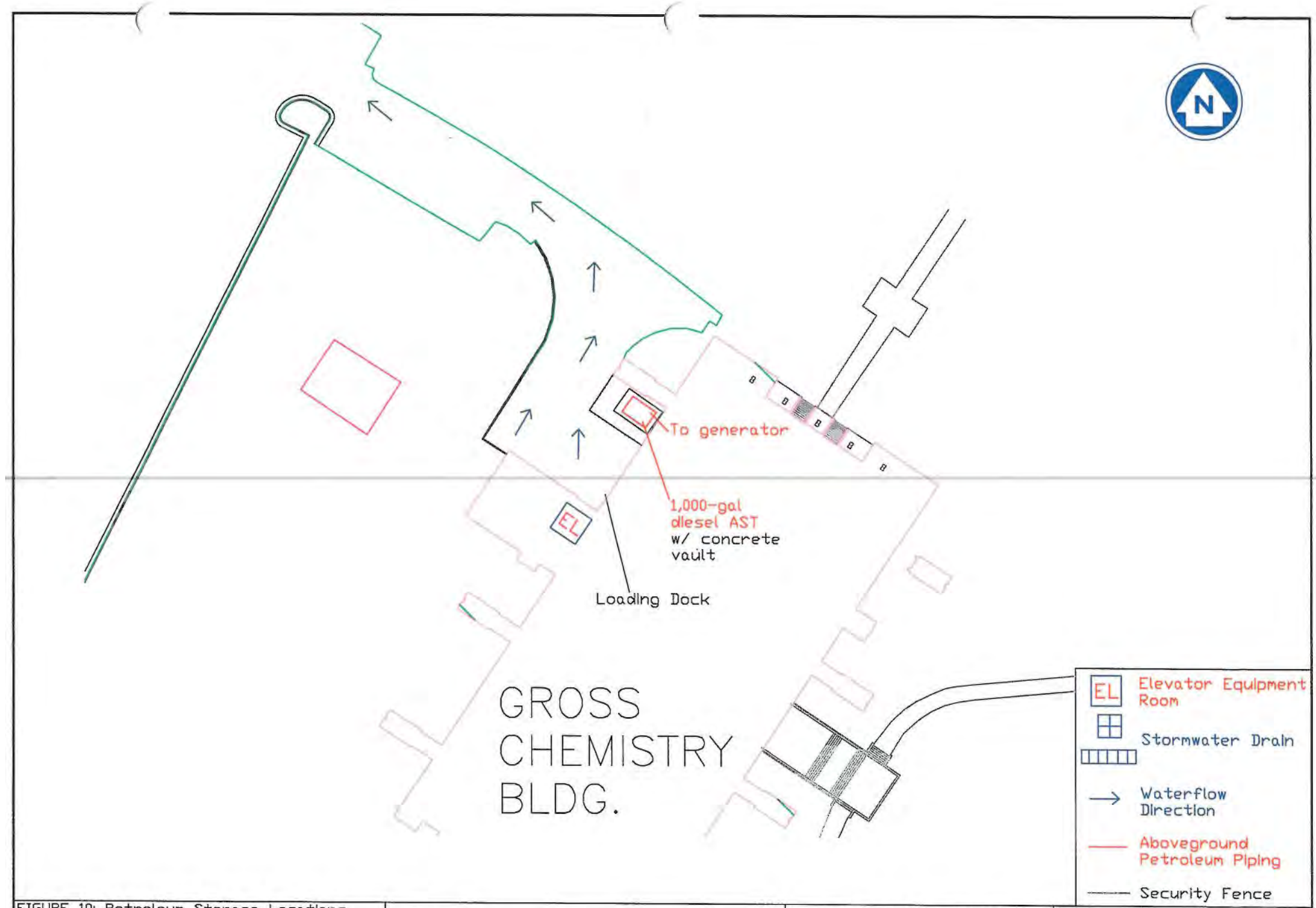

FIGURE 10: Petroleum Storage Locations

Gross Chemistry Building (7765)
North West Side
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
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DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
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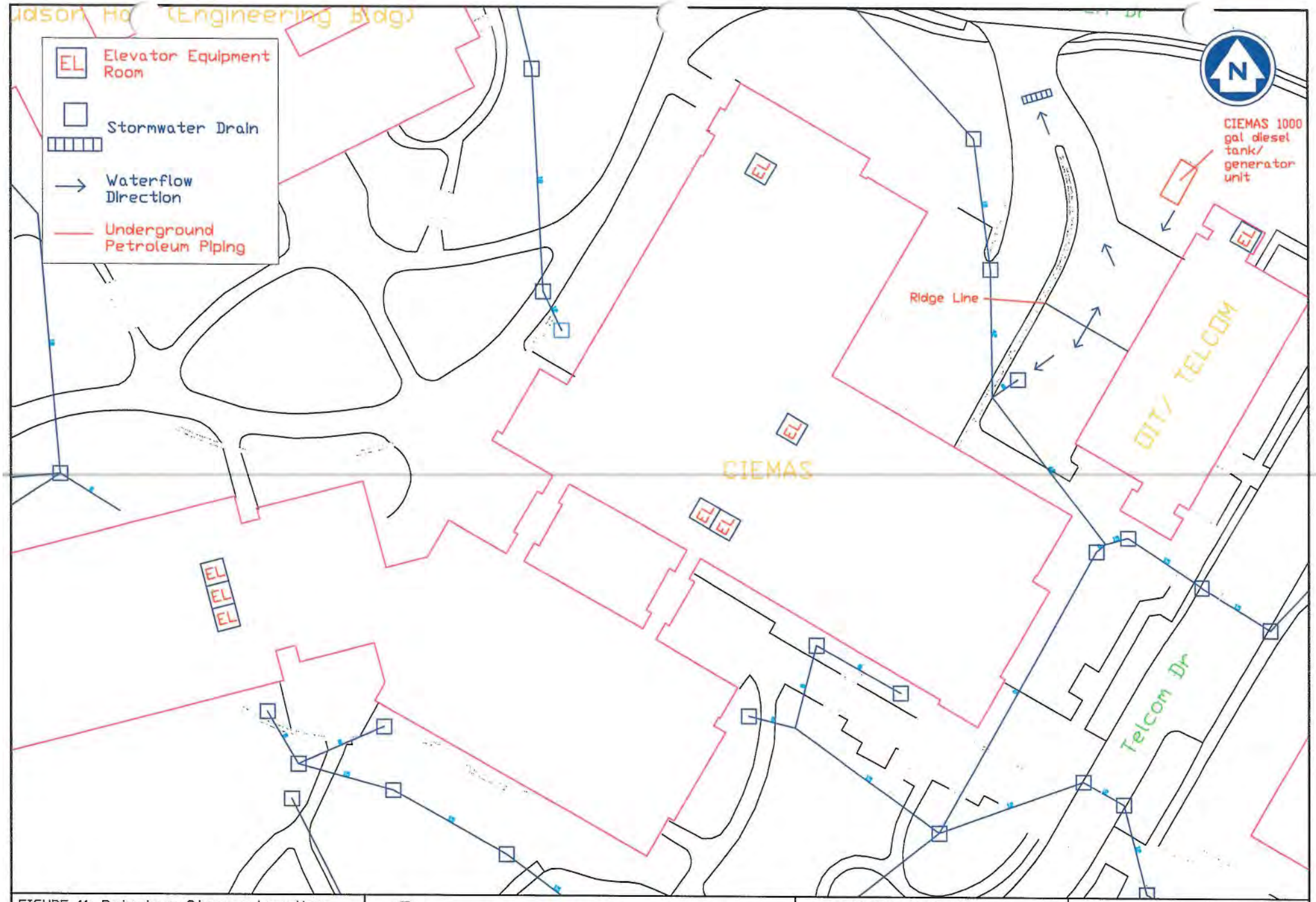

FIGURE 11: Petroleum Storage Locations

CIEMAS Building (7735) &
TELCOM Building (7746)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
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PROJECT NO.: 218013
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FILE: DU Fig 11

SCALE: Not to Scale

FIGURE 12: Petroleum Storage Locations

North Building (7756)
North East Side
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
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DATE: May, 2015
DRAWN BY: SRG
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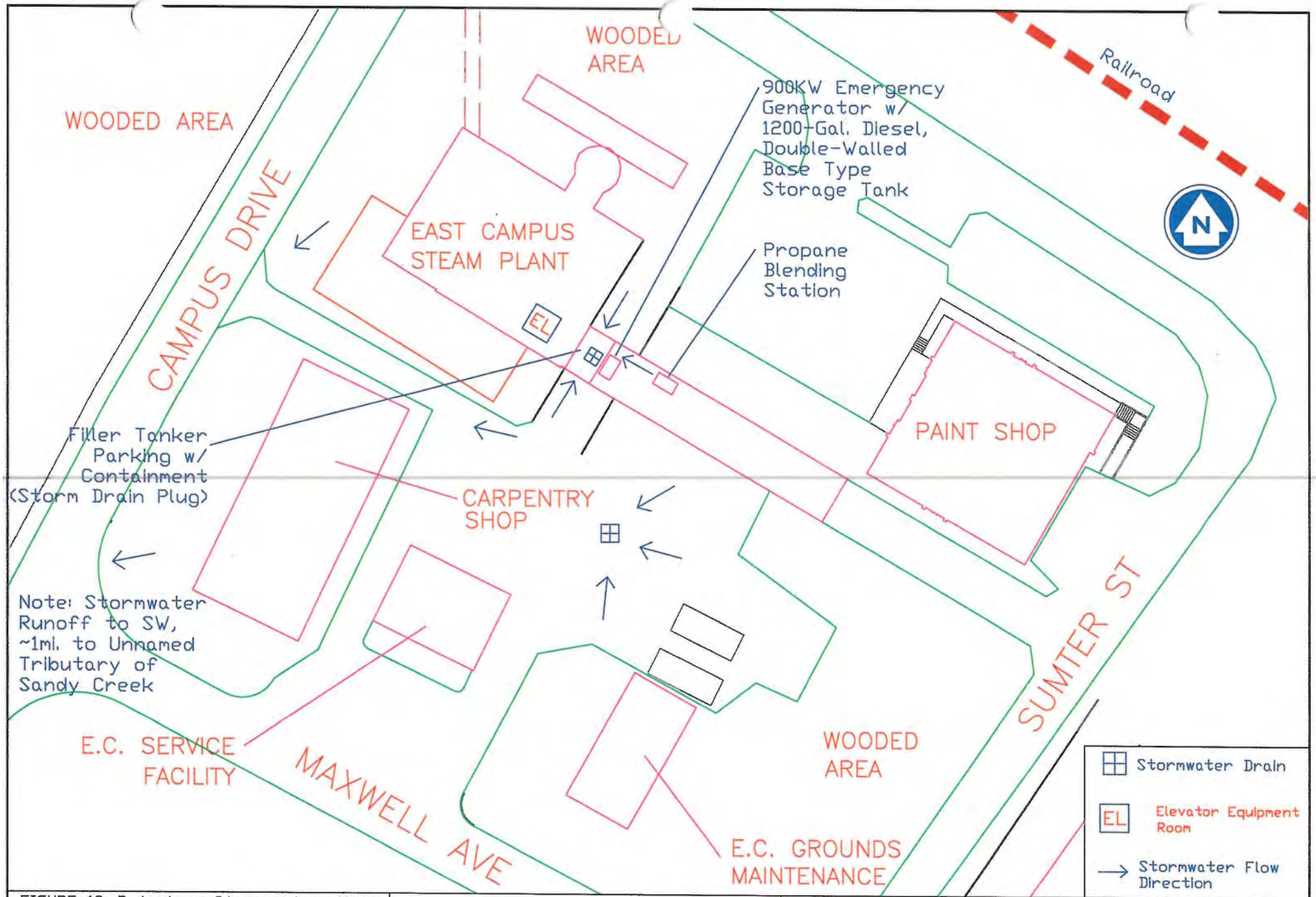

FIGURE 13: Petroleum Storage Locations

East Campus Steam Plant (7974)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

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DATE: May, 2015
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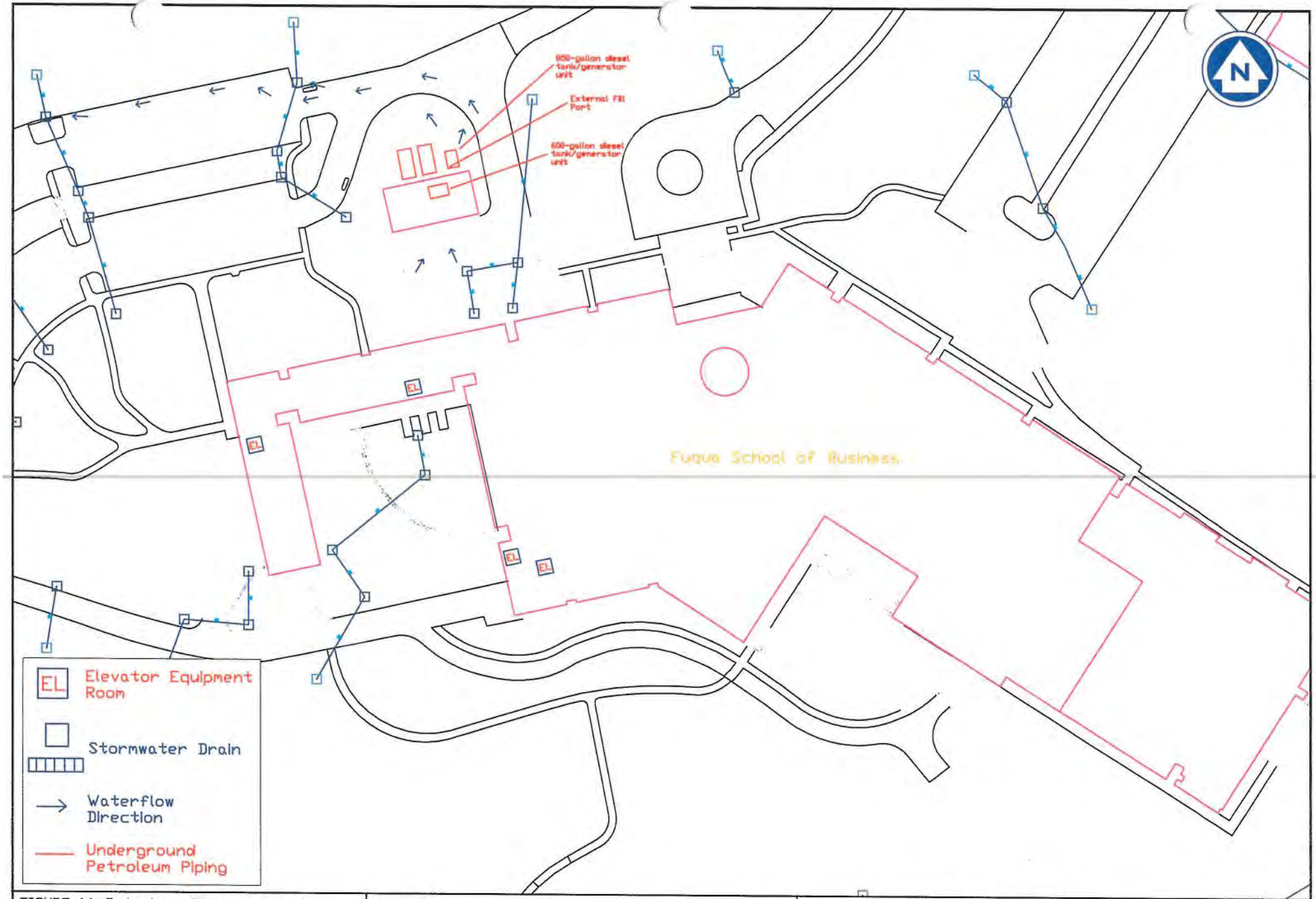

FIGURE 14: Petroleum Storage Locations

Fuqua Business School (7760)
Duke University
Durham, North Carolina

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LEAF ENVIRONMENTAL & ENGINEERING, P.C.

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DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
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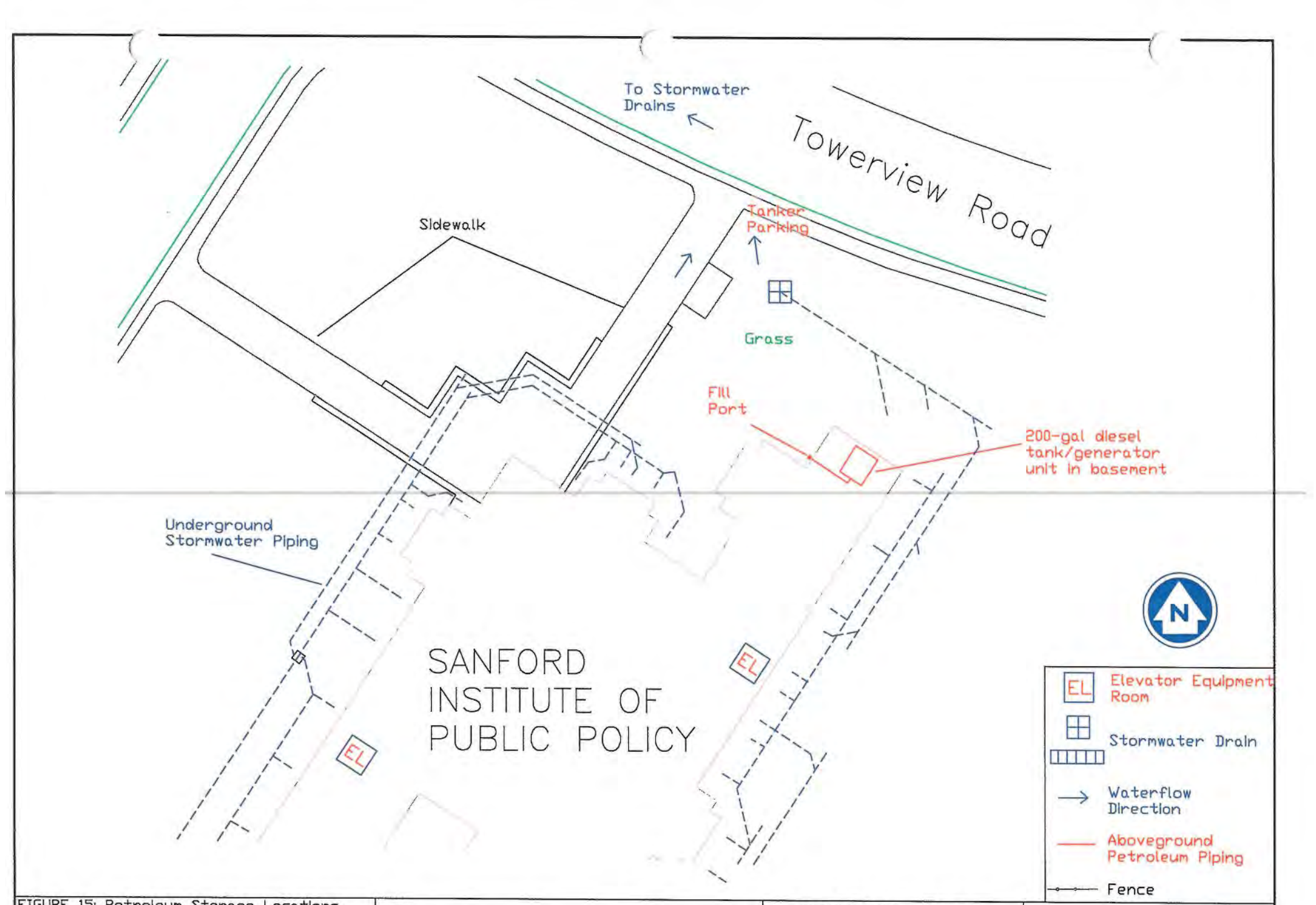

FIGURE 15: Petroleum Storage Locations

Sanford Public Policy Building (7725)
North Side
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
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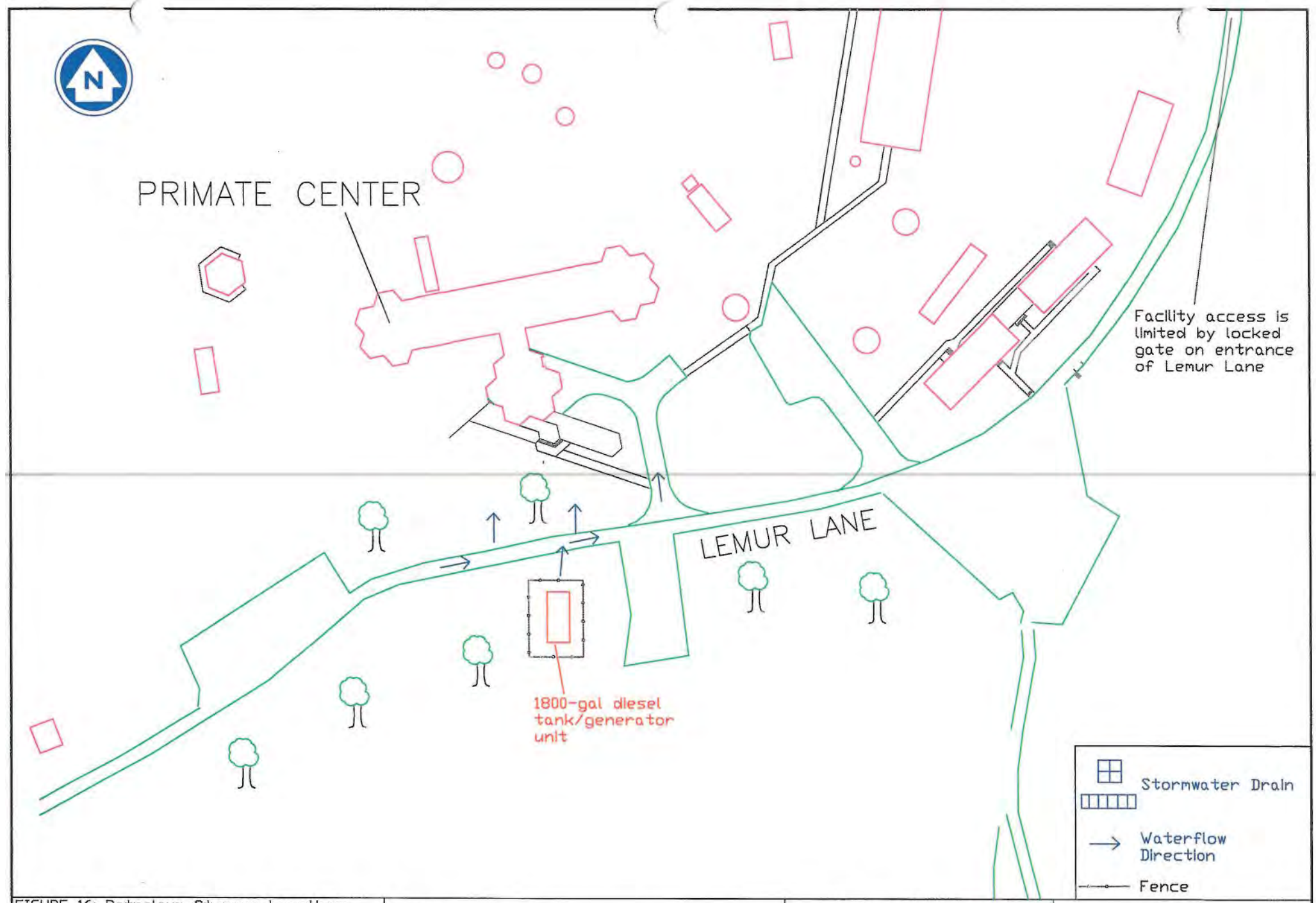

FIGURE 16: Petroleum Storage Locations

Primate Center (7764)
South Side
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
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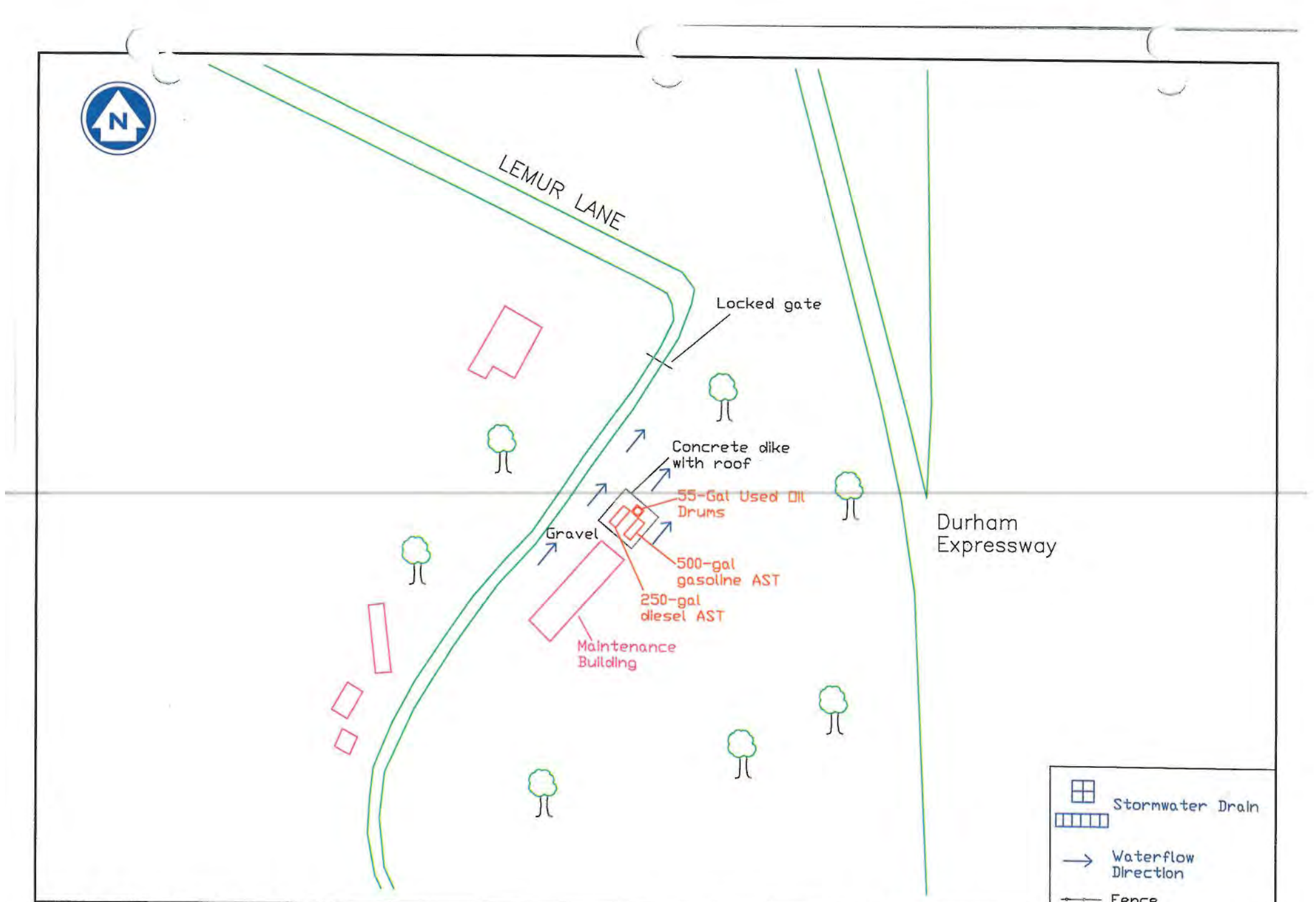

FIGURE 17: Petroleum Storage Locations

Duke Forest Maintenance
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 17

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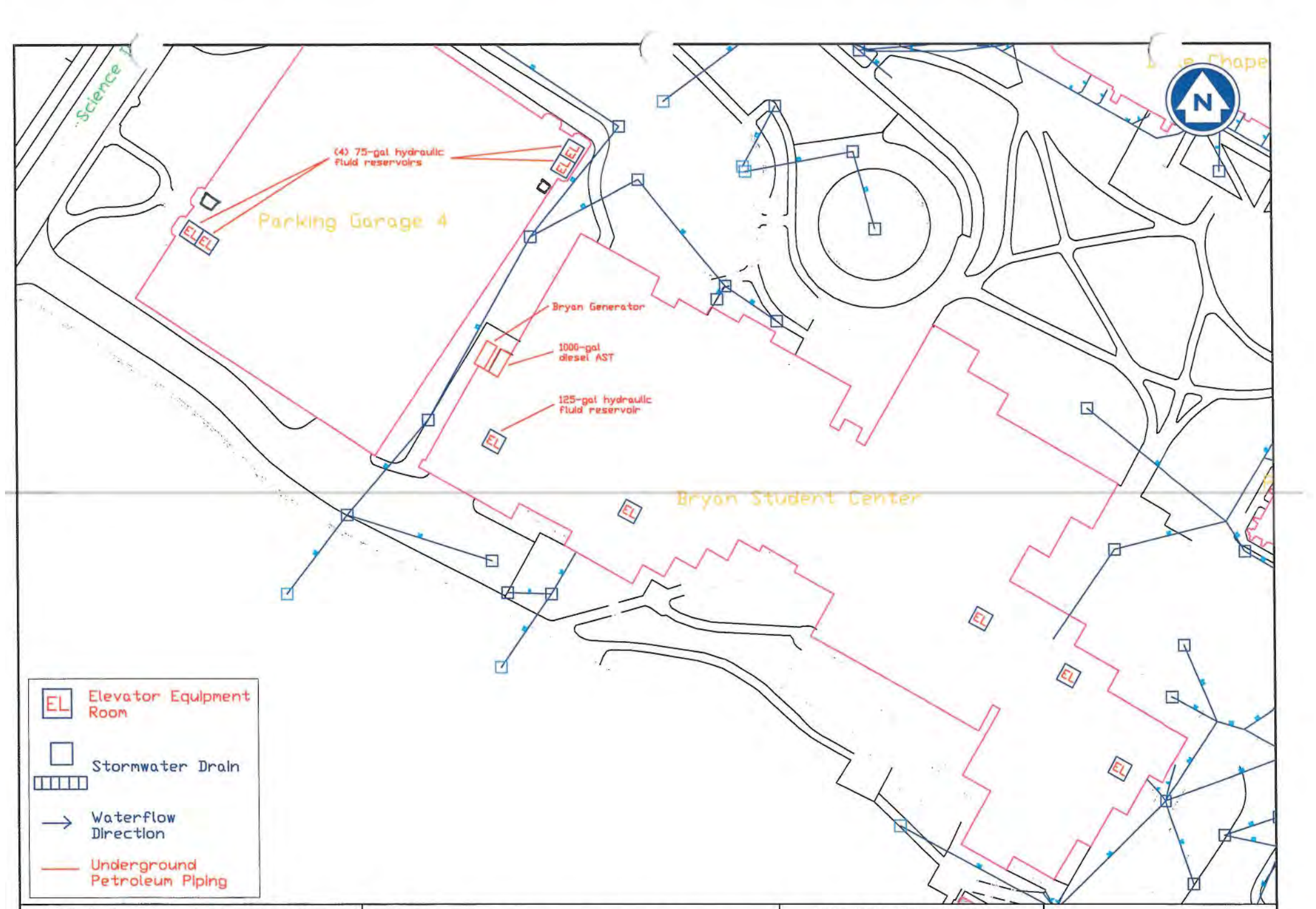

FIGURE 18: Petroleum Storage Locations

Bryan Student Center (7791) &
Parking Garage 4 (7736)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
LEAF ENVIRONMENTAL & ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 18

SCALE: Not to Scale

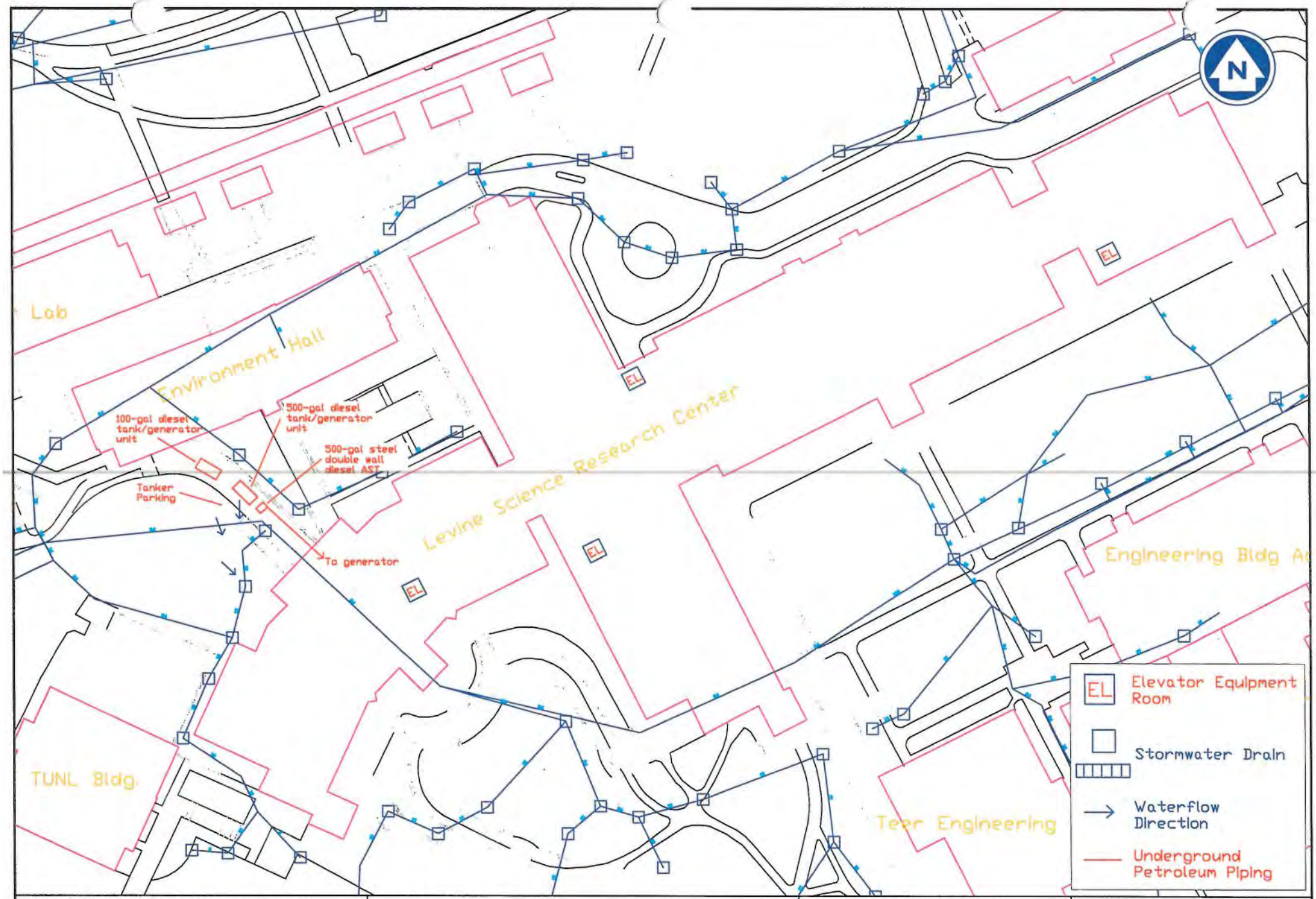

FIGURE 19: Petroleum Storage Locations

L.S.R.C. (7776) & Environment Hall (7768)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
LEAF ENVIRONMENTAL & ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 19

SCALE: Not to Scale

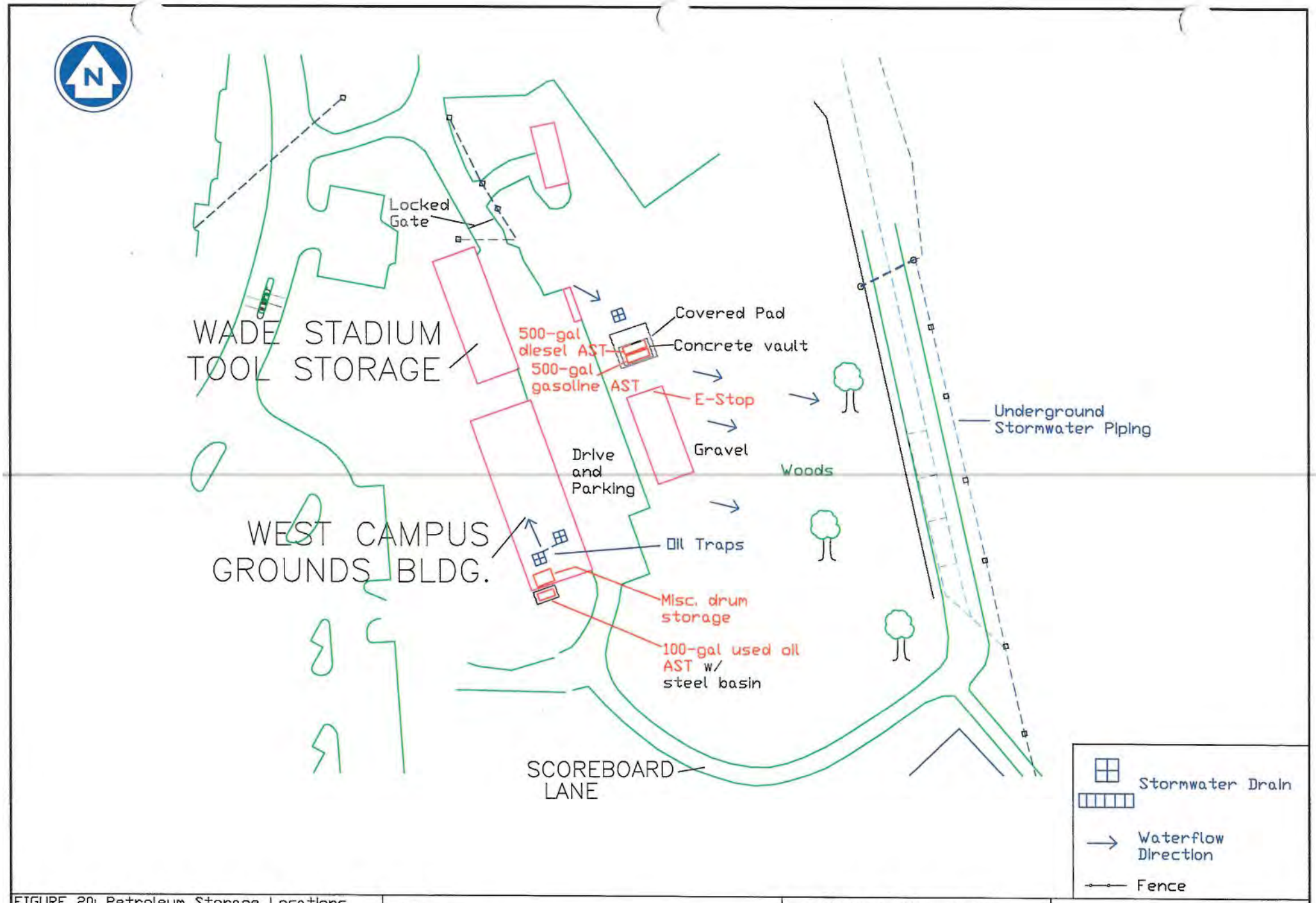

FIGURE 20: Petroleum Storage Locations

West Campus Grounds
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

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DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 20

SCALE: Not to Scale

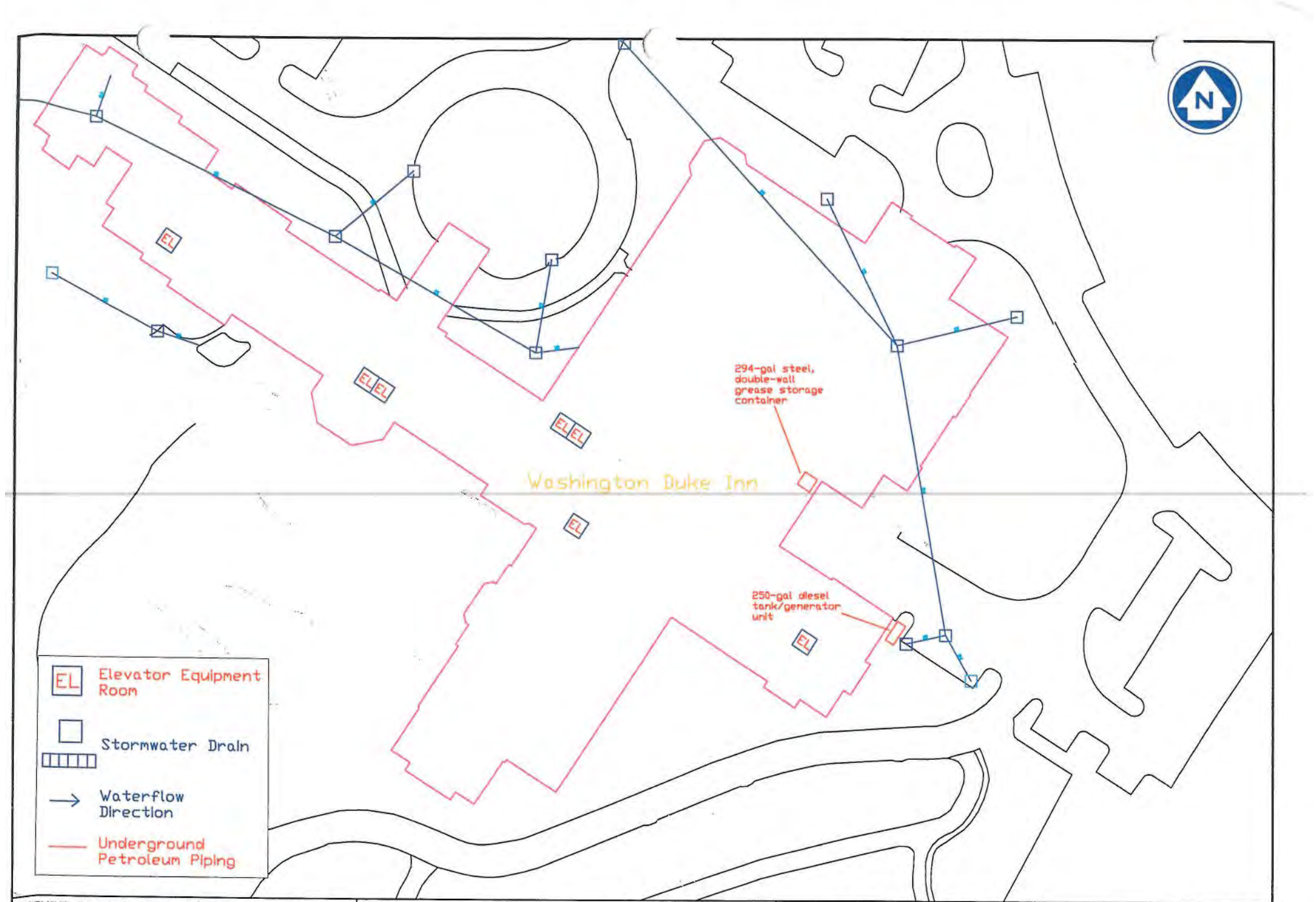

FIGURE 21: Petroleum Storage Locations

Washington Duke Inn (8047)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
LEAF ENVIRONMENTAL & ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 21

SCALE: Not to Scale

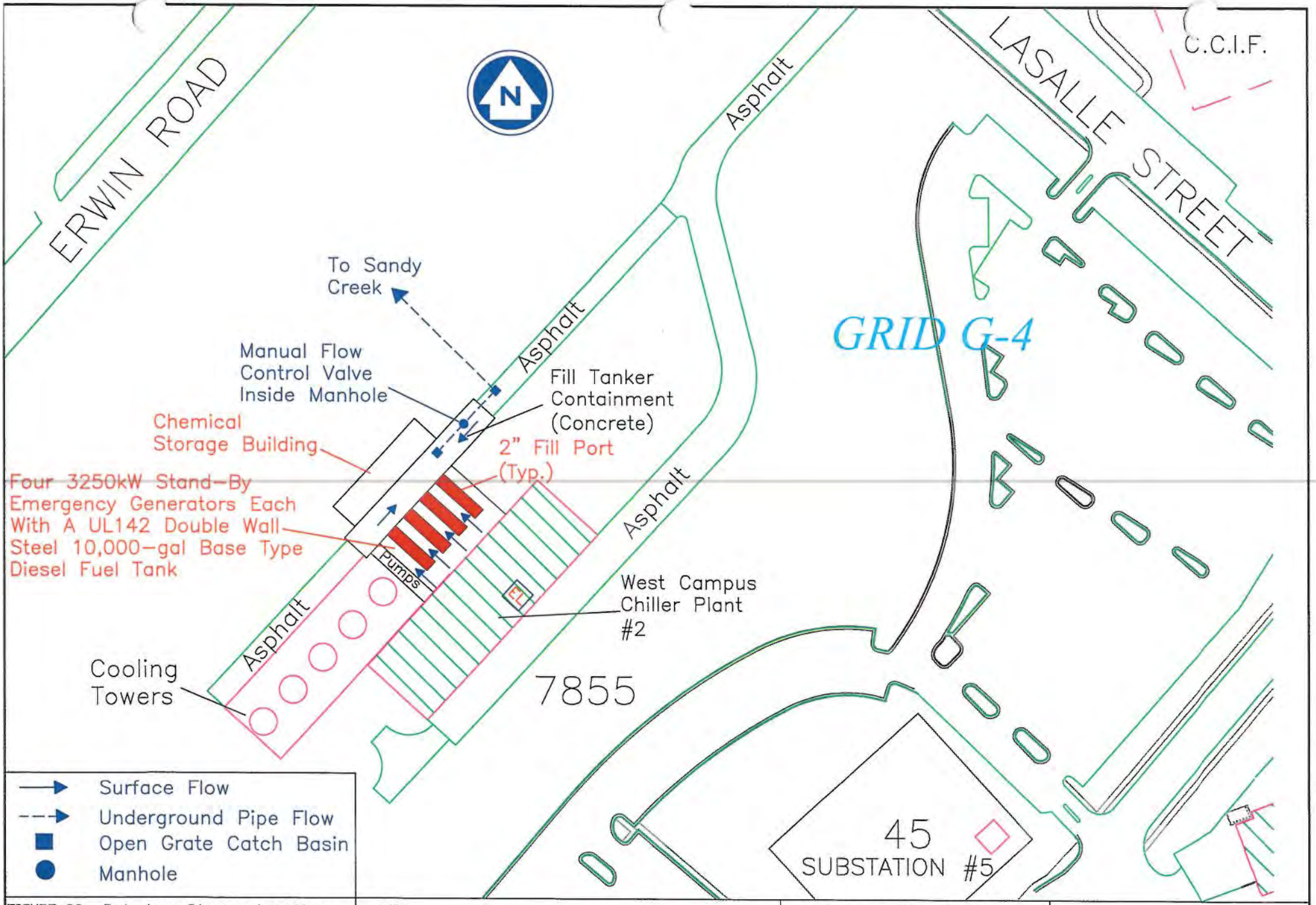

FIGURE 22: Petroleum Storage Locations

West Campus Chiller Plant #2 (7855)
Duke University
Durham, Durham County, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 22

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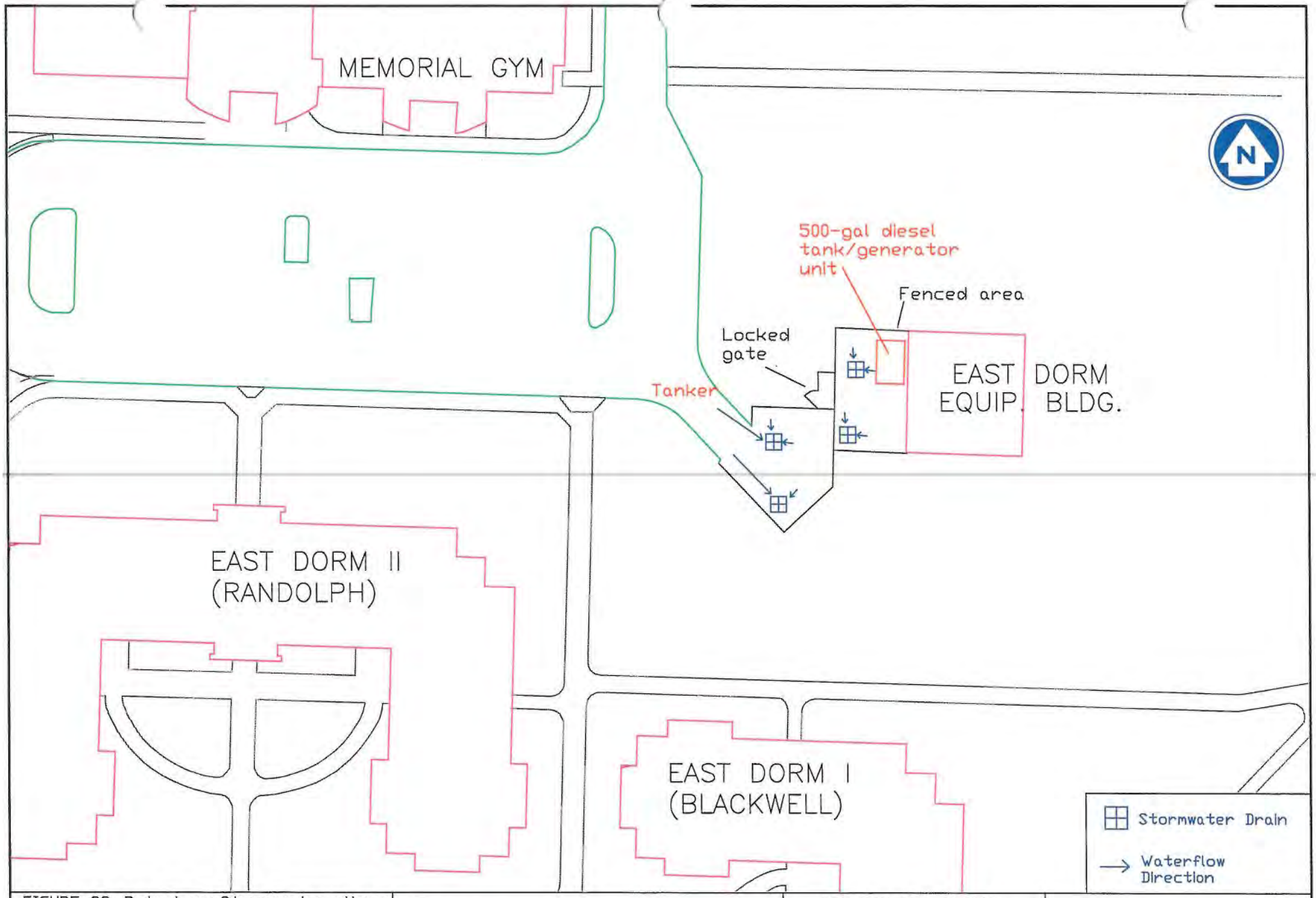

FIGURE 23: Petroleum Storage Locations

East Dorm Equipment Building (7245)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 23

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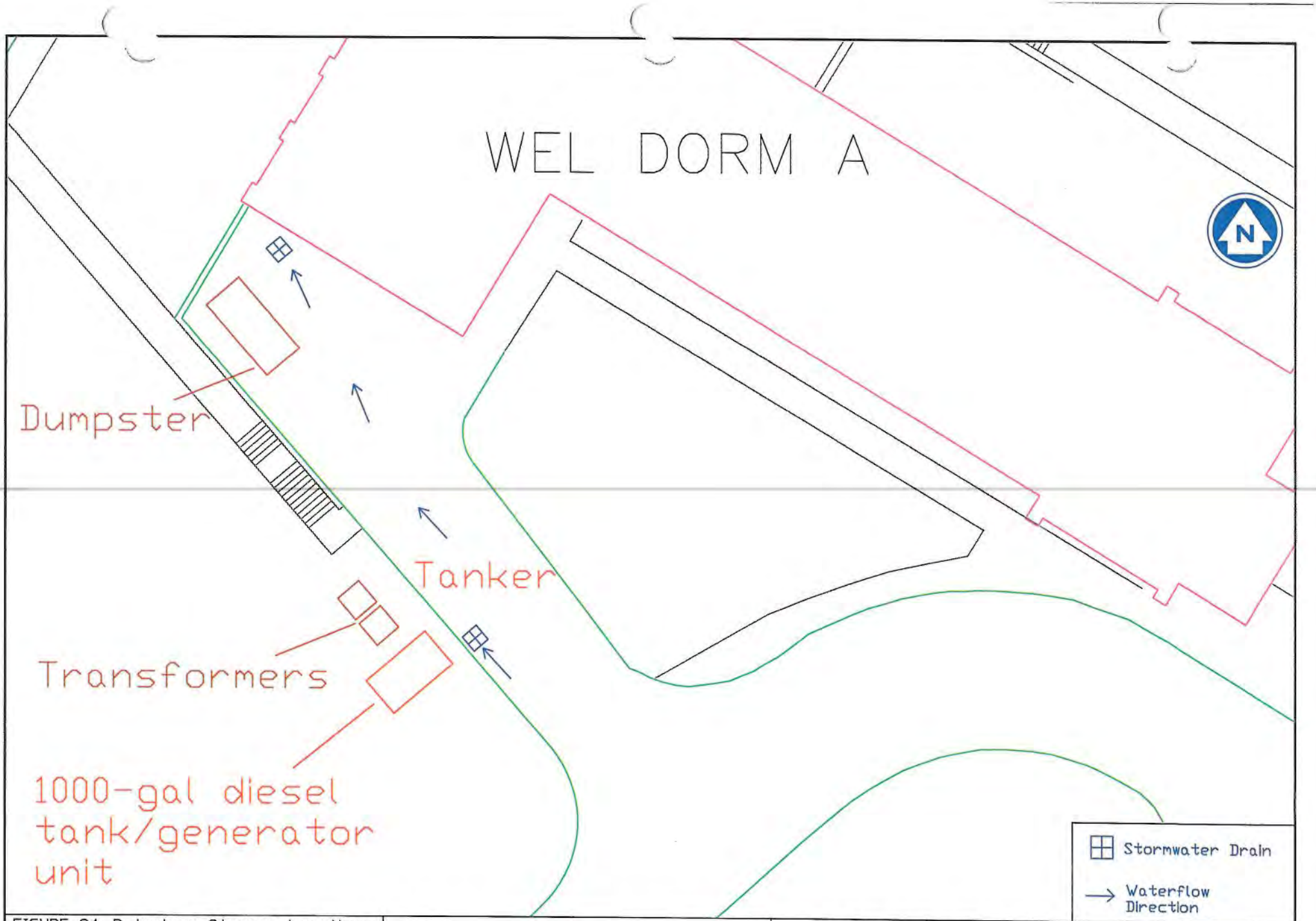

FIGURE 24: Petroleum Storage Locations

WEL Dorm (7795)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 24

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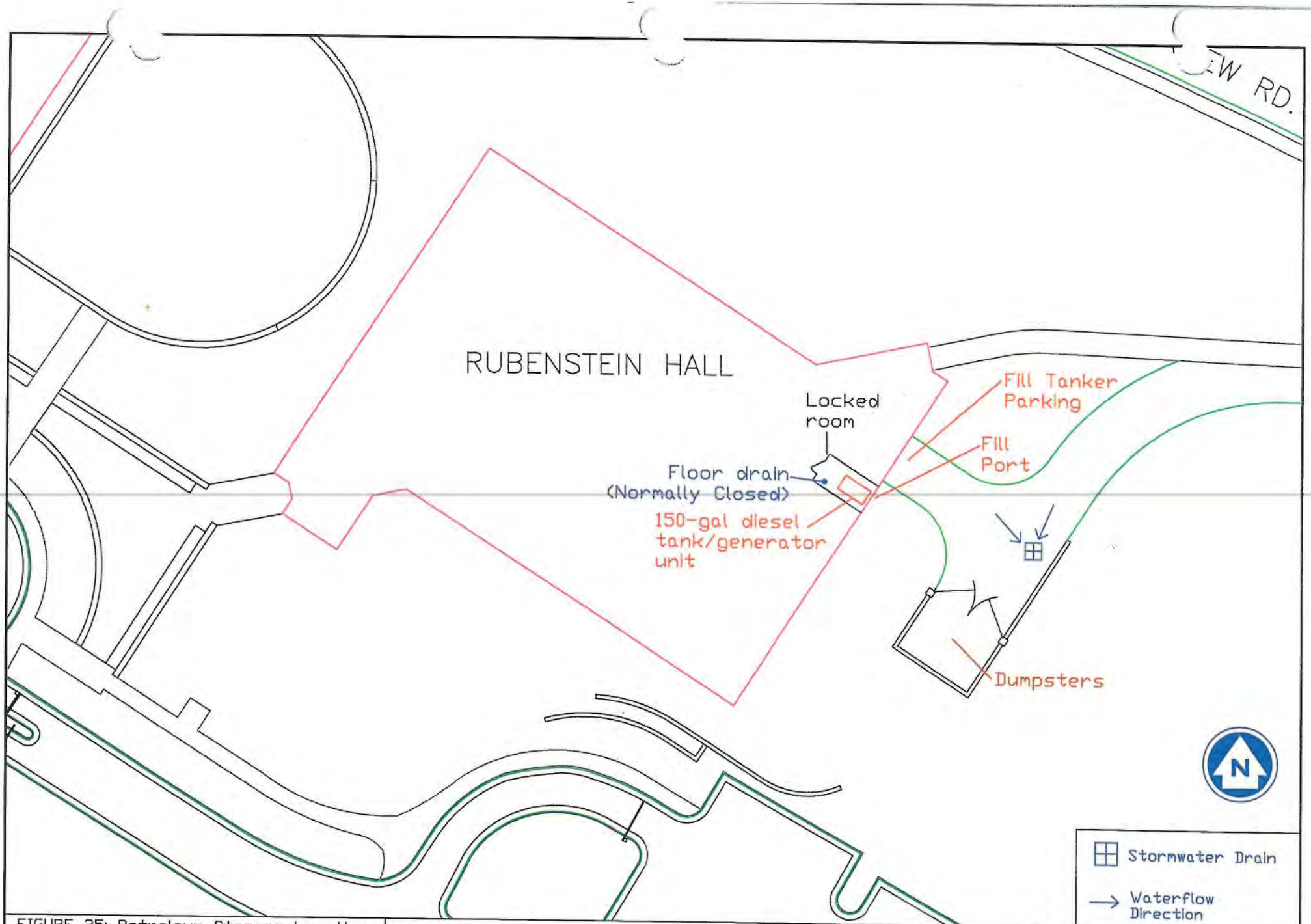

FIGURE 25: Petroleum Storage Locations

Rubenstein Hall (7739)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 25

SCALE: Not to Scale

FIGURE 26: Petroleum Storage Locations

Edens Quad 1A (7786) & 2A (7789)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
LEAF ENVIRONMENTAL & ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 26

SCALE: Not to Scale

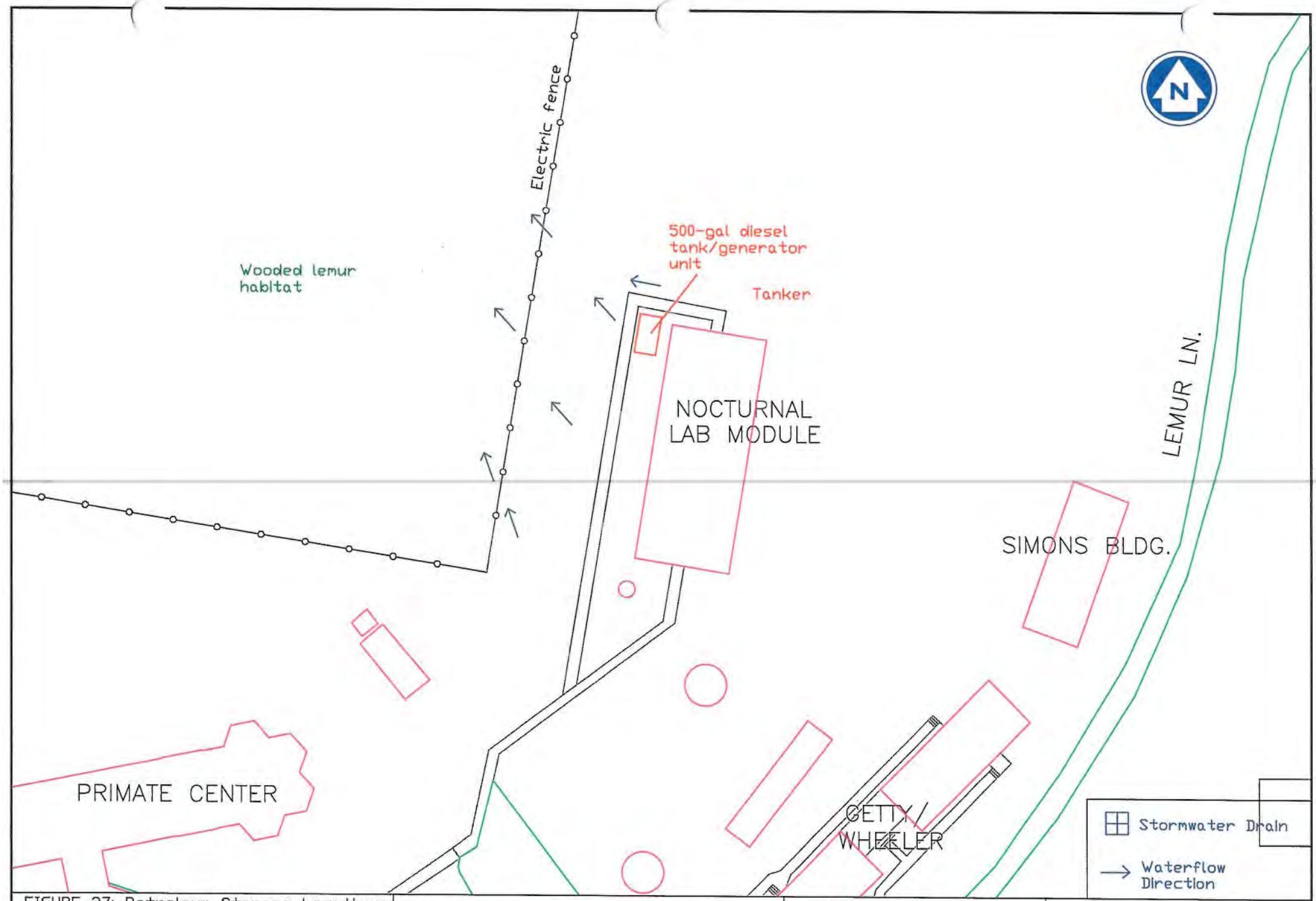

FIGURE 27: Petroleum Storage Locations

Nocturnal Lab (7815)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 27

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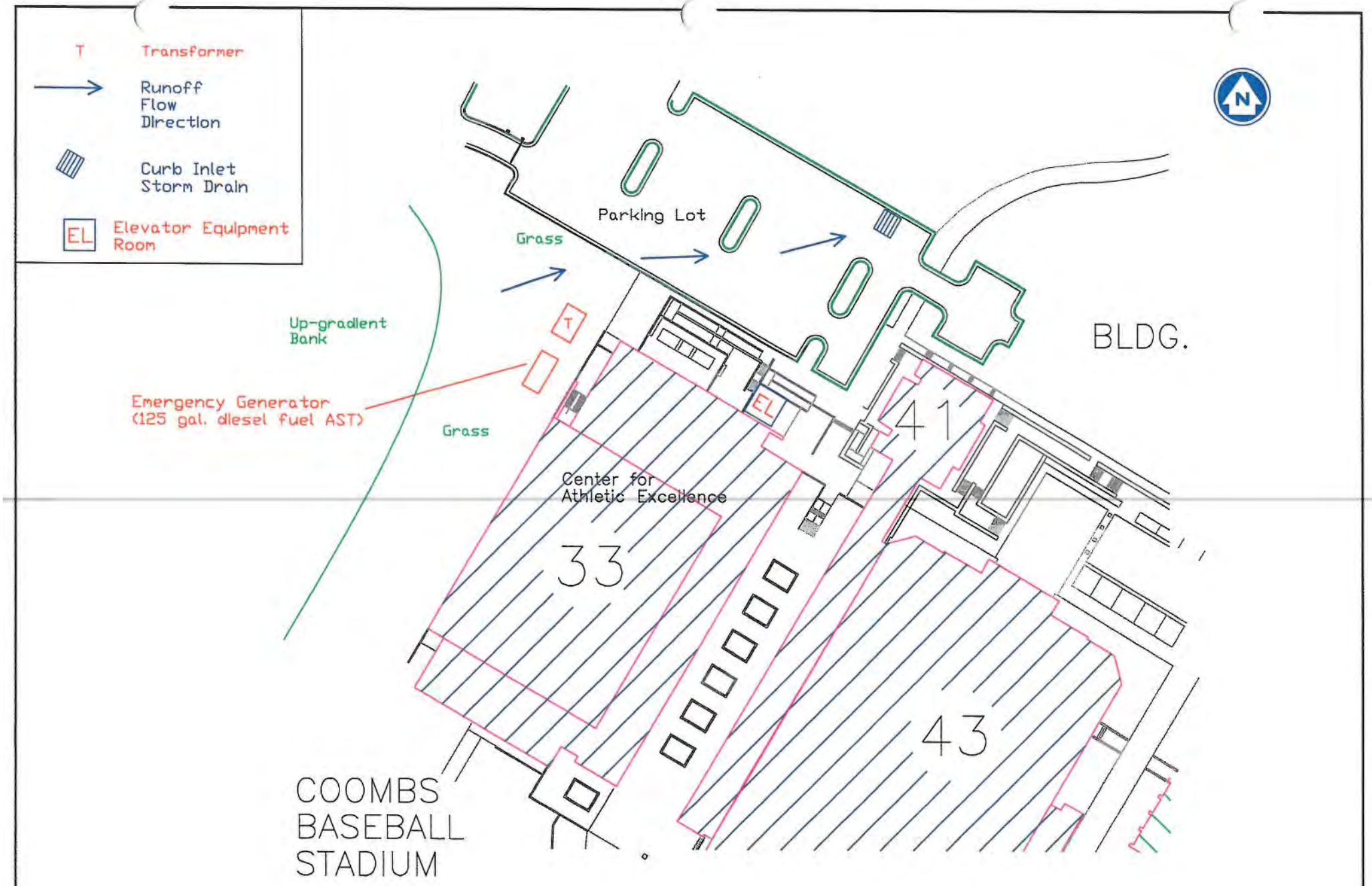

FIGURE 28: Petroleum Storage Locations

Center for Athletic Excellence (7733)
Duke University
Durham, Durham County, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: October, 2013
DRAWN BY: RES
APPROVED BY: TWM
FILE: DU Fig 28

SCALE: Not to Scale

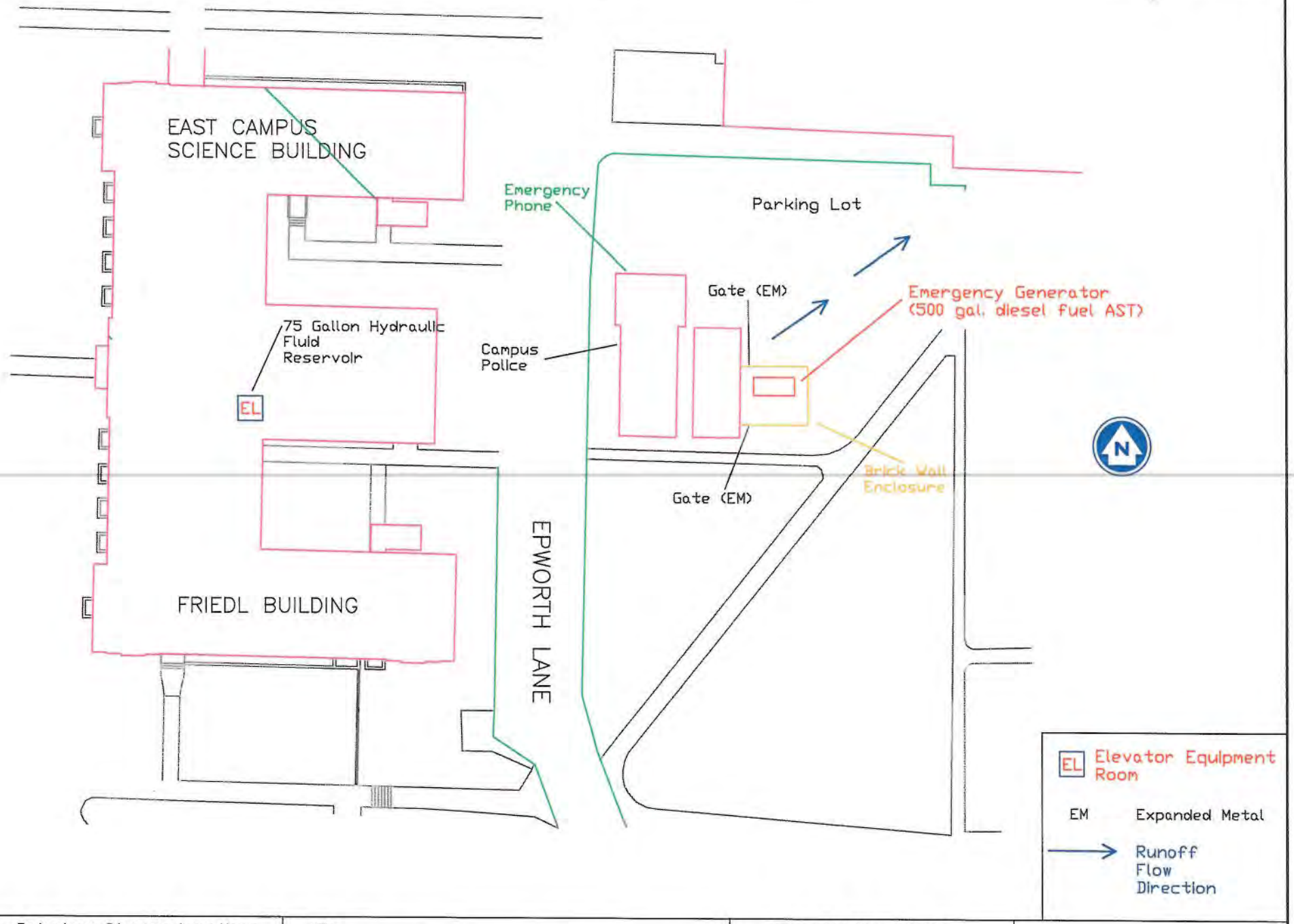

FIGURE 29: Petroleum Storage Locations

East Campus Science Bldg. - Friedl (7224)
Duke University
Durham, Durham County, North Carolina

BENSINGER & GARRISON
ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 29

SCALE: Not to Scale

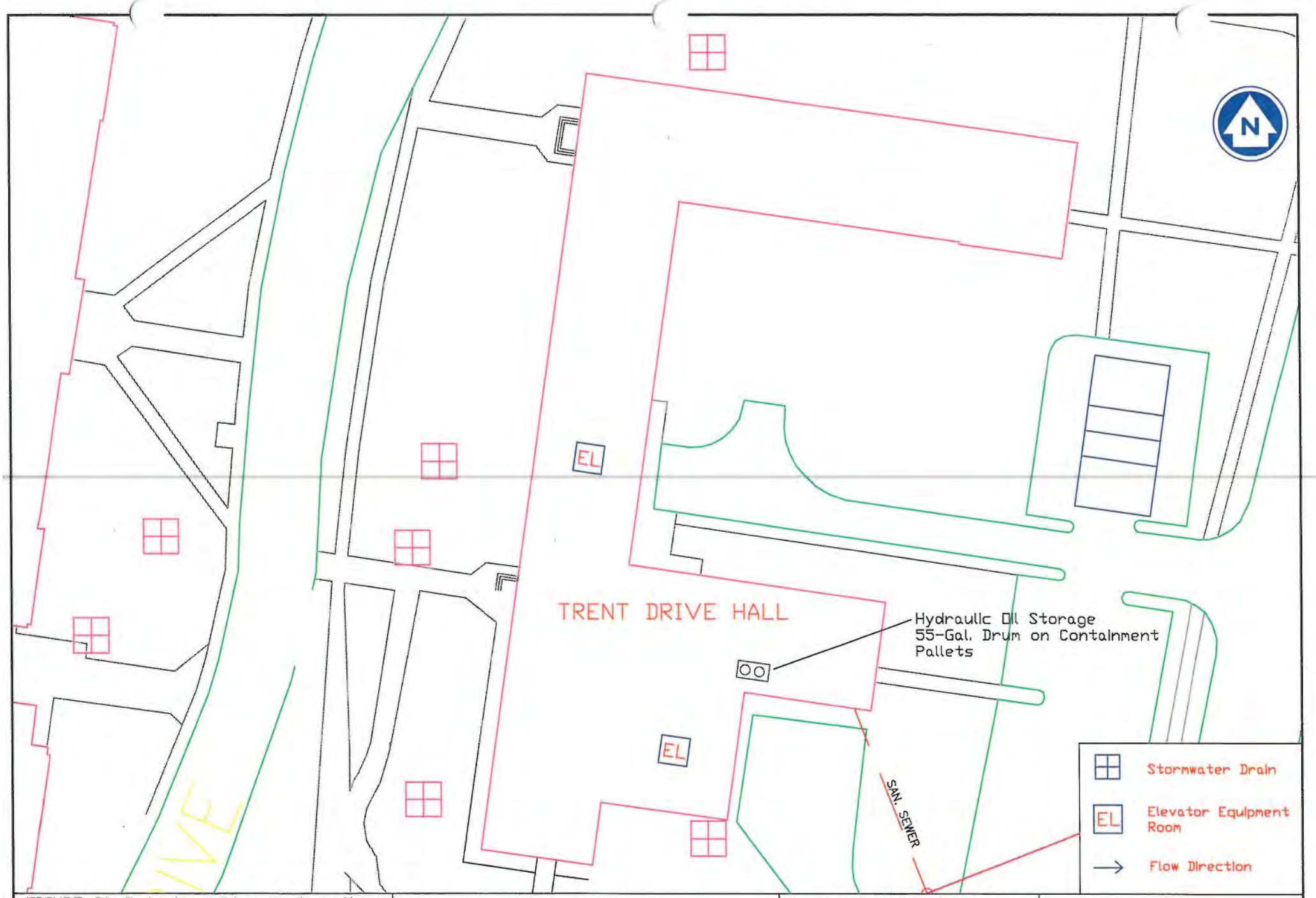

FIGURE 30: Petroleum Storage Locations

Trent Drive Hall (7512)
Duke University
Durham, North Carolina

BENSINGER & GARRISON
ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 30

SCALE: Not to Scale

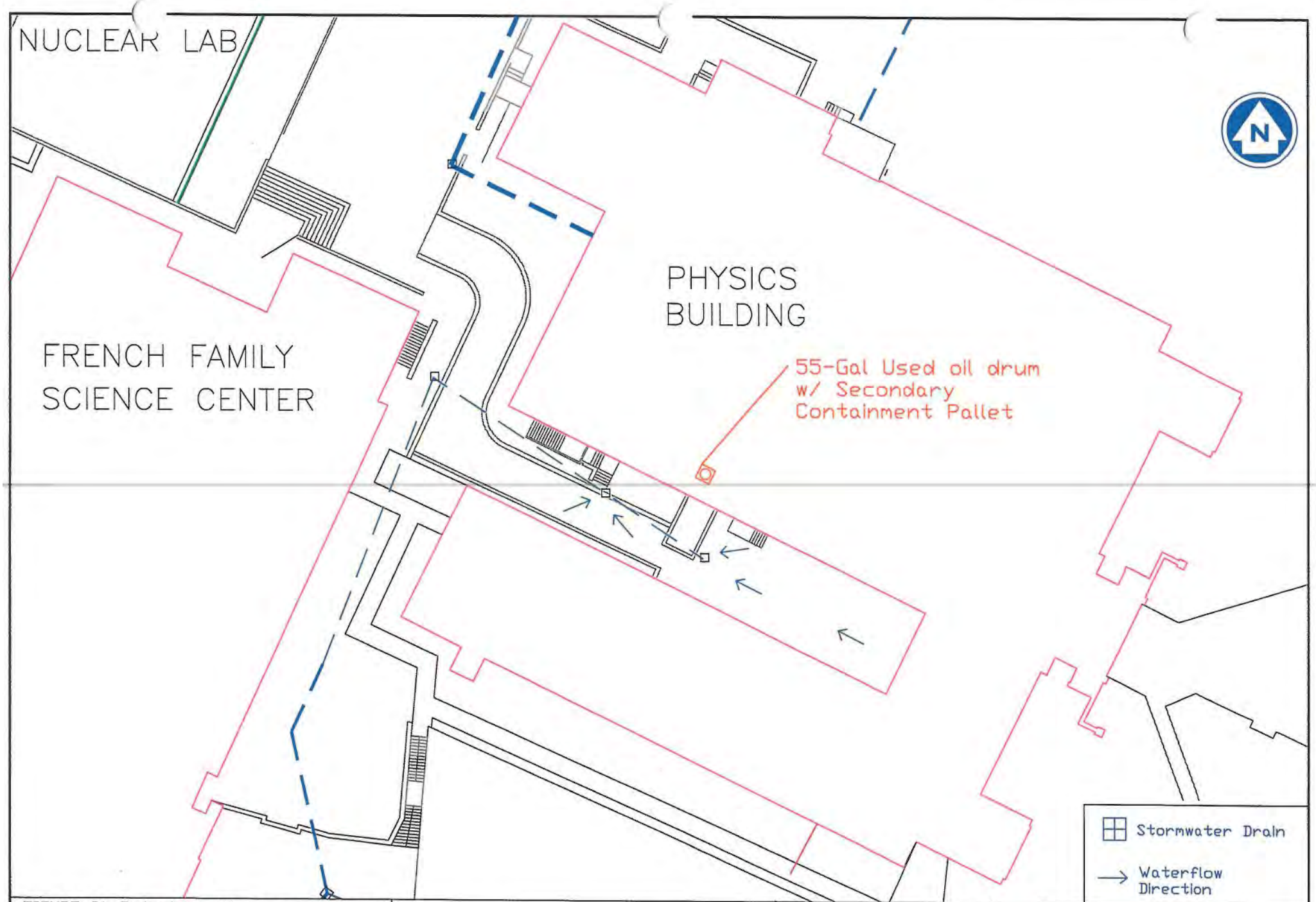

FIGURE 31: Petroleum Storage Locations

Physics Building (7749)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 31

SCALE: Not to Scale

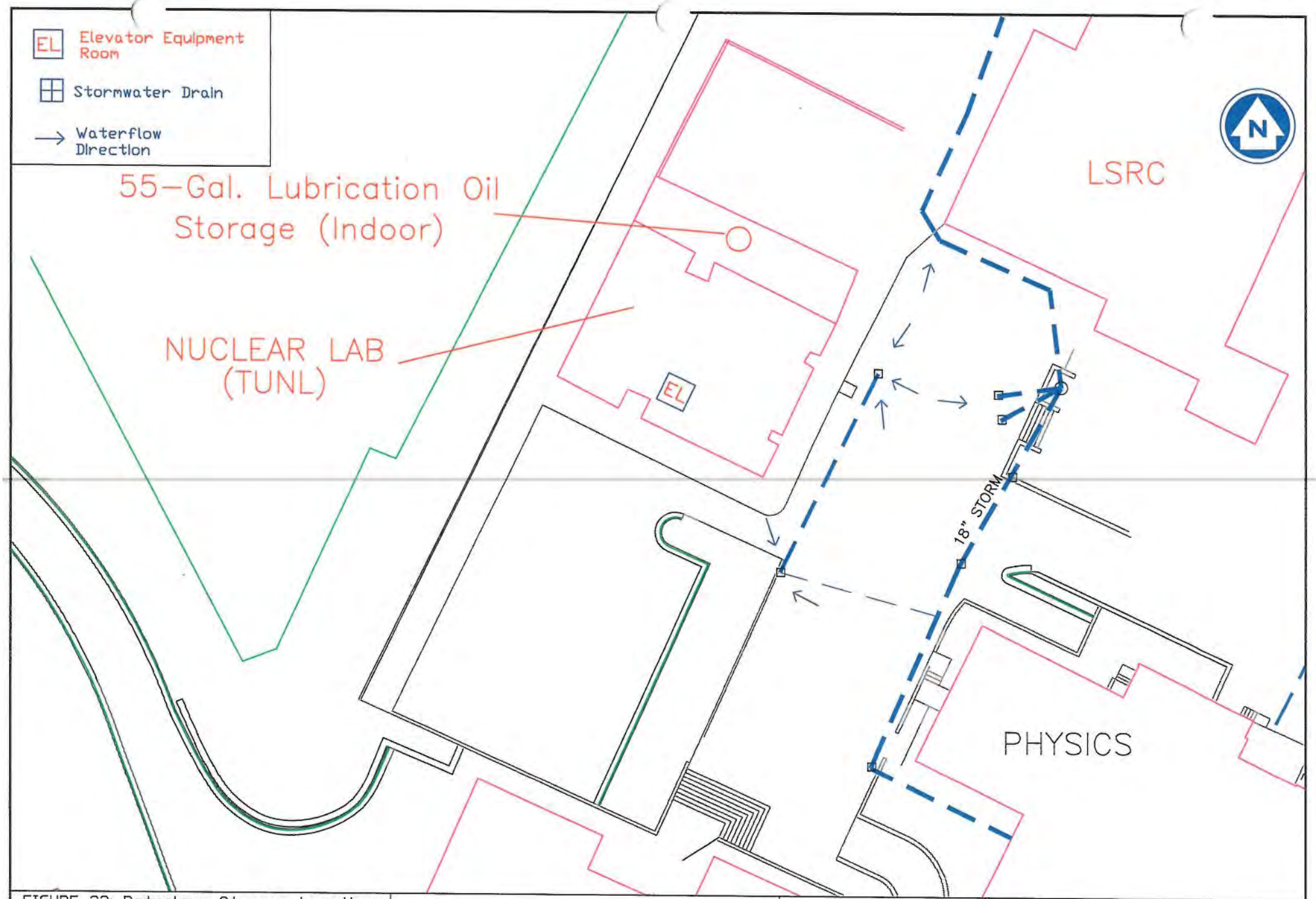

FIGURE 32: Petroleum Storage Locations

TUNL - Triangle Univ. Nuclear Lab (7767)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 32

SCALE: Not to Scale

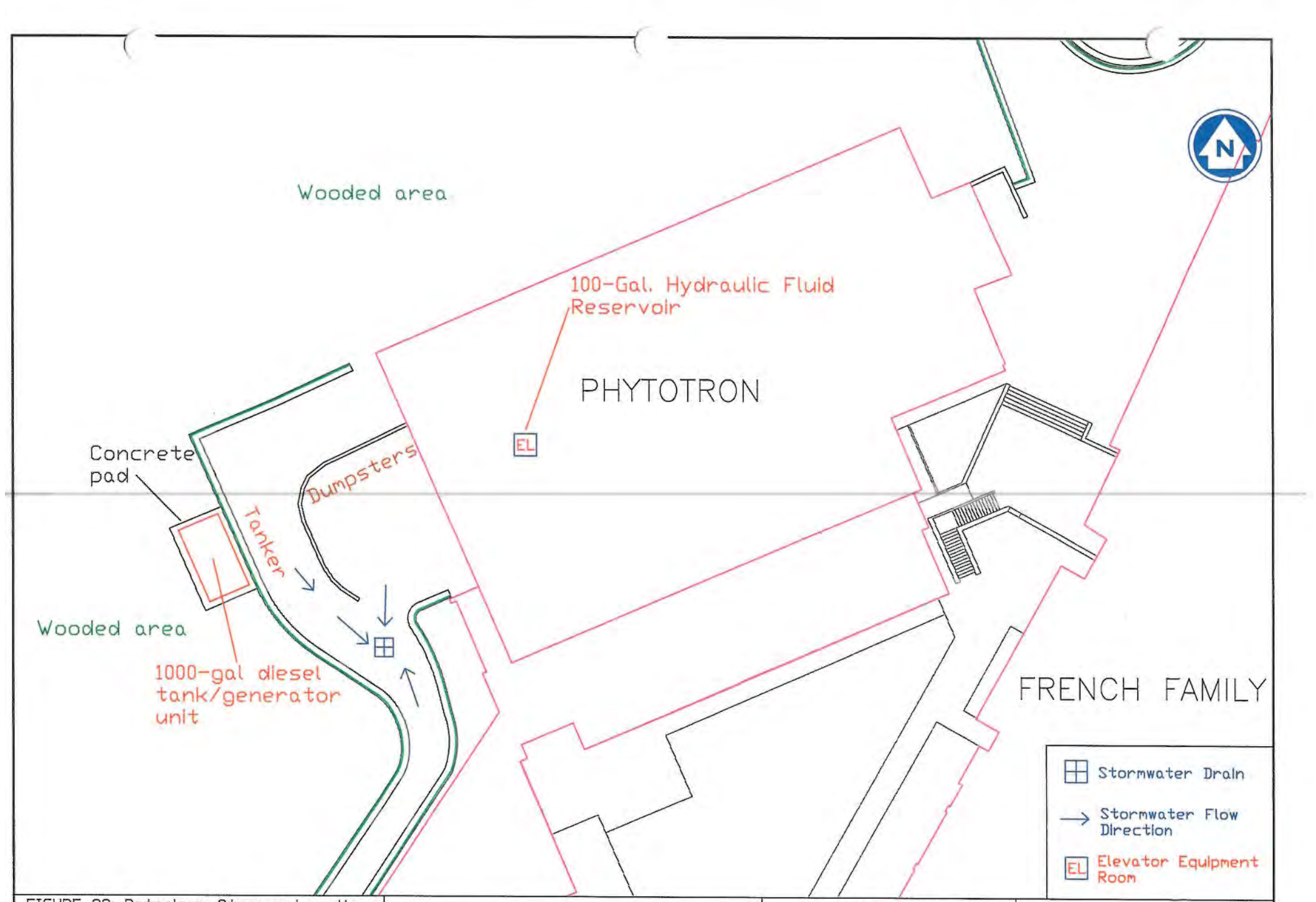

FIGURE 33: Petroleum Storage Locations

Phytotron Building (7771)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 33

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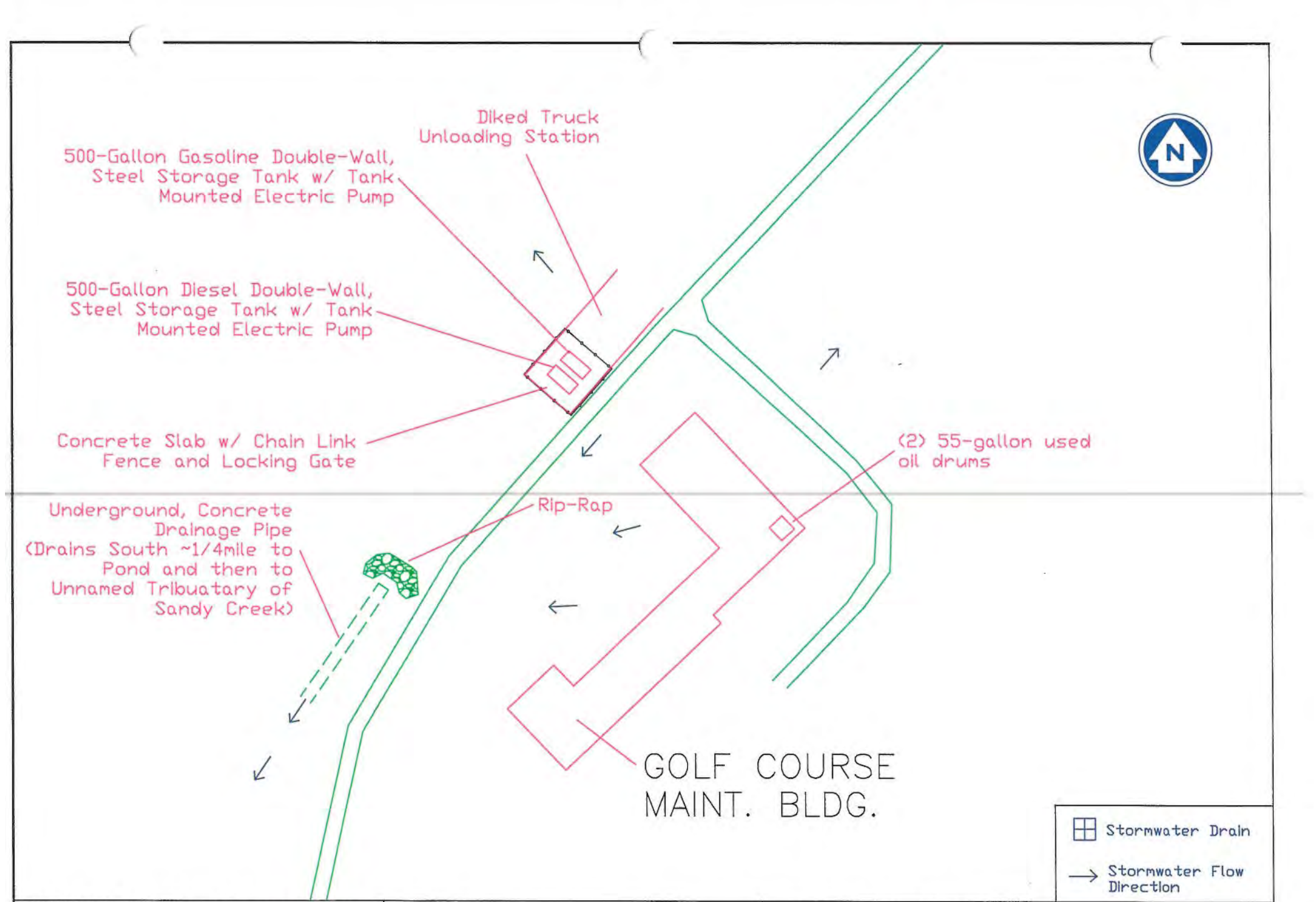

FIGURE 34: Petroleum Storage Locations

Golf Course Maintenance Bldg.
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: October, 2013
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 34

SCALE: Not to Scale

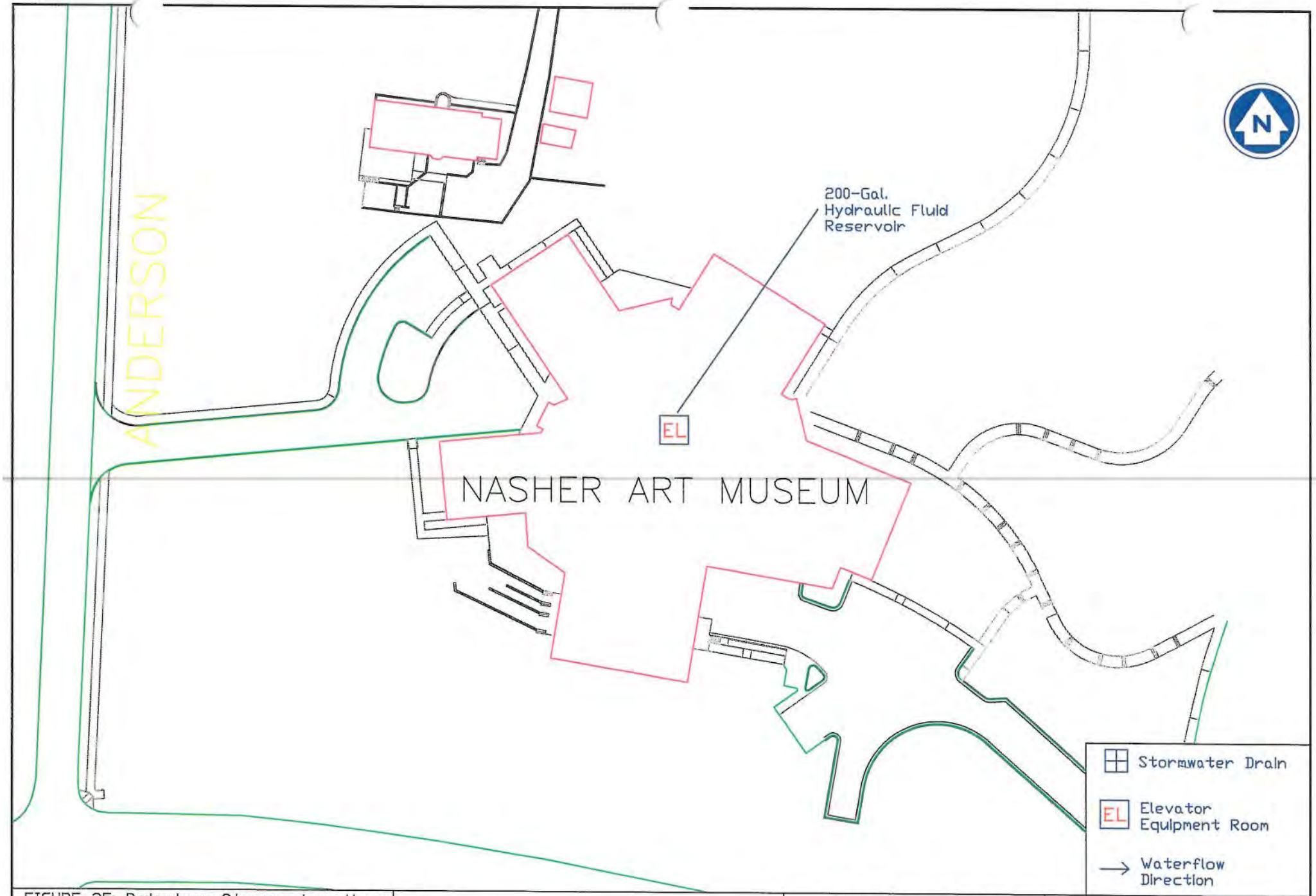

FIGURE 35: Petroleum Storage Locations

Nasher Art Museum (7198)
Duke University
Durham, North Carolina

BENSINGER & GARRISON
ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 35

SCALE: Not to Scale

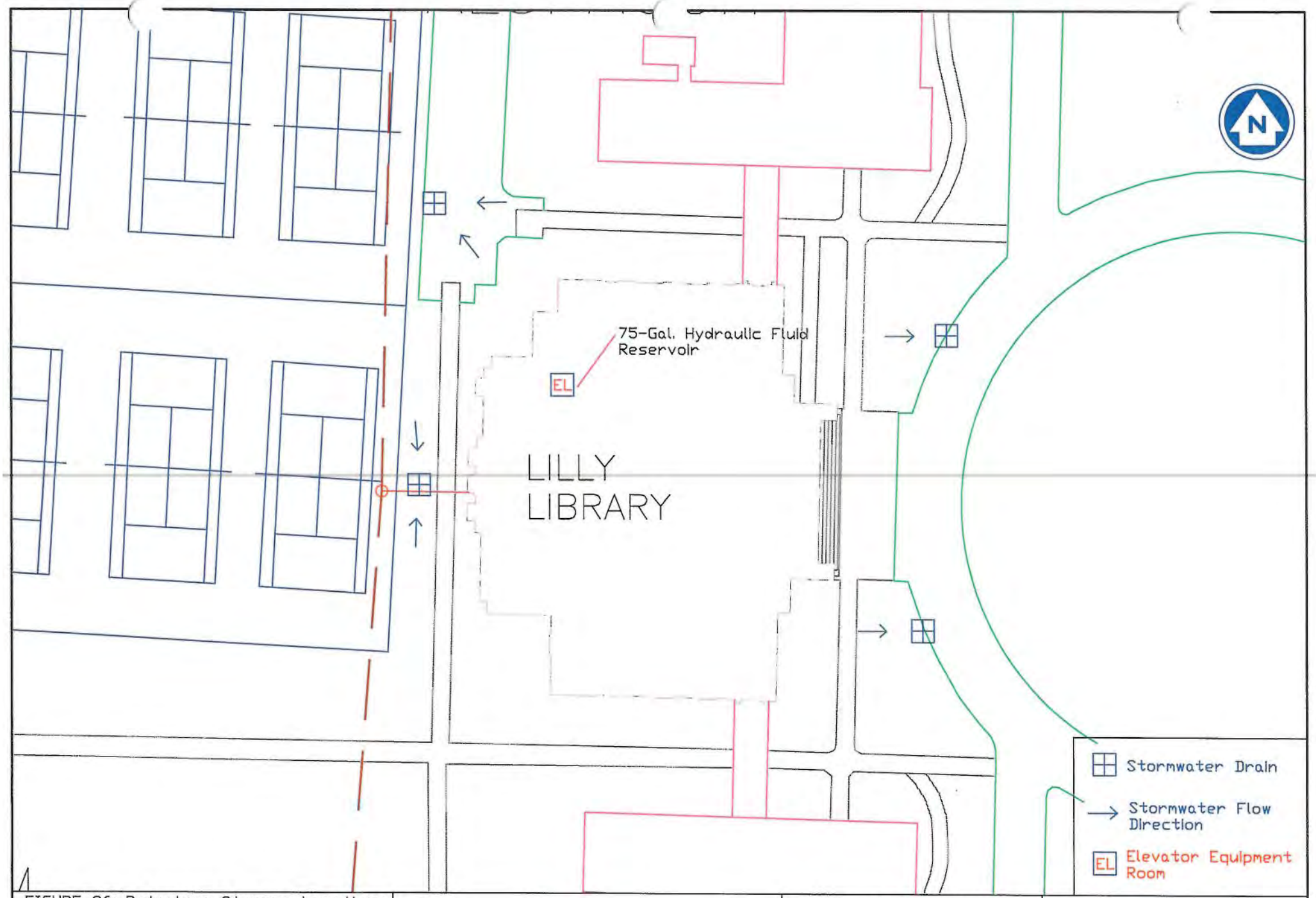

FIGURE 36: Petroleum Storage Locations

Lilly Library (7216)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 36

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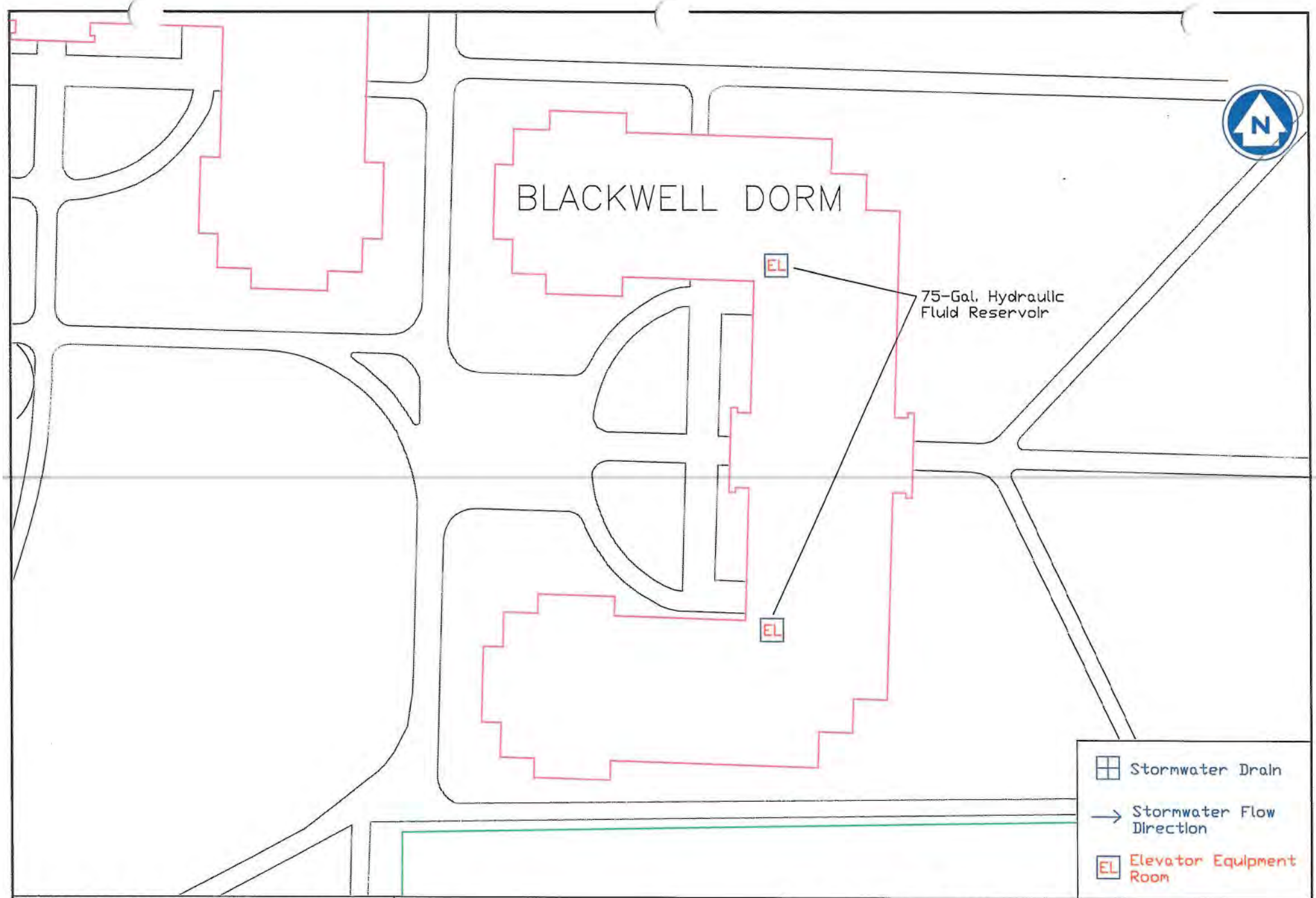

FIGURE 37: Petroleum Storage Locations

Blackwell Dorm (7234)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 37

SCALE: Not to Scale

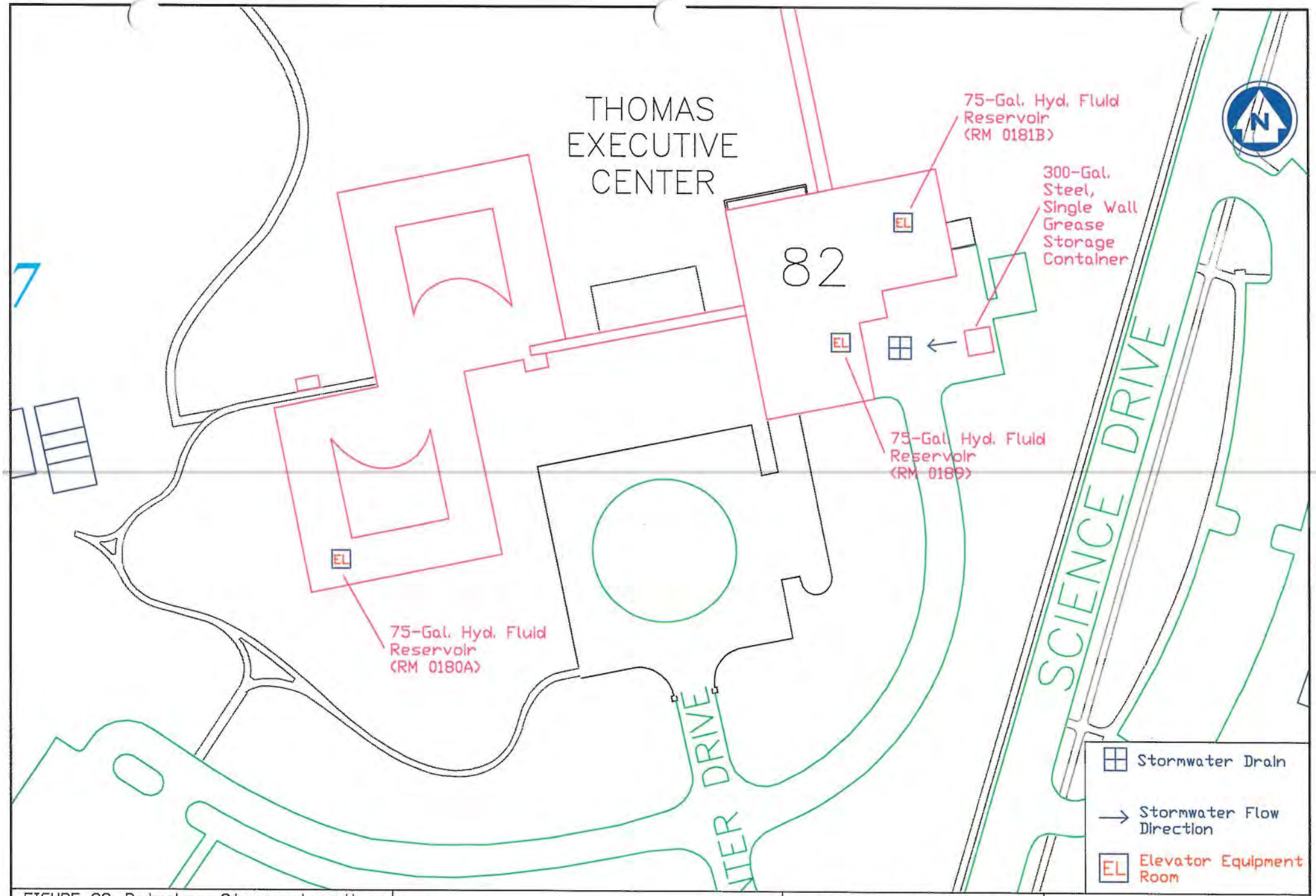

FIGURE 38: Petroleum Storage Locations

R.D. Thomas Center (7782)
Duke University
Durham, North Carolina

BENSINGER & GARRISON
ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 38

SCALE: Not to Scale

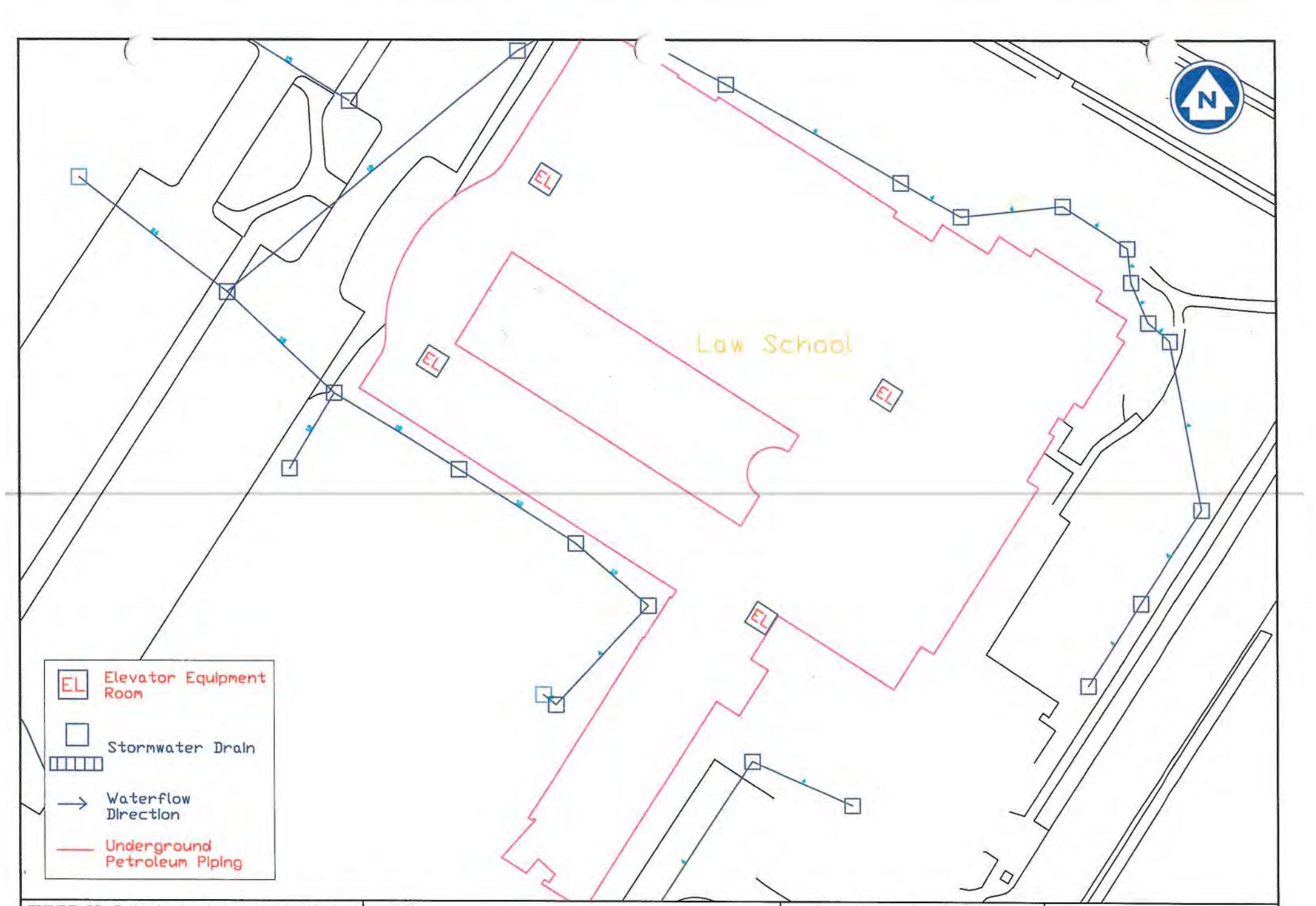

FIGURE 39: Petroleum Storage Locations

Law School (7759)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
LEAF ENVIRONMENTAL & ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 39

SCALE: Not to Scale

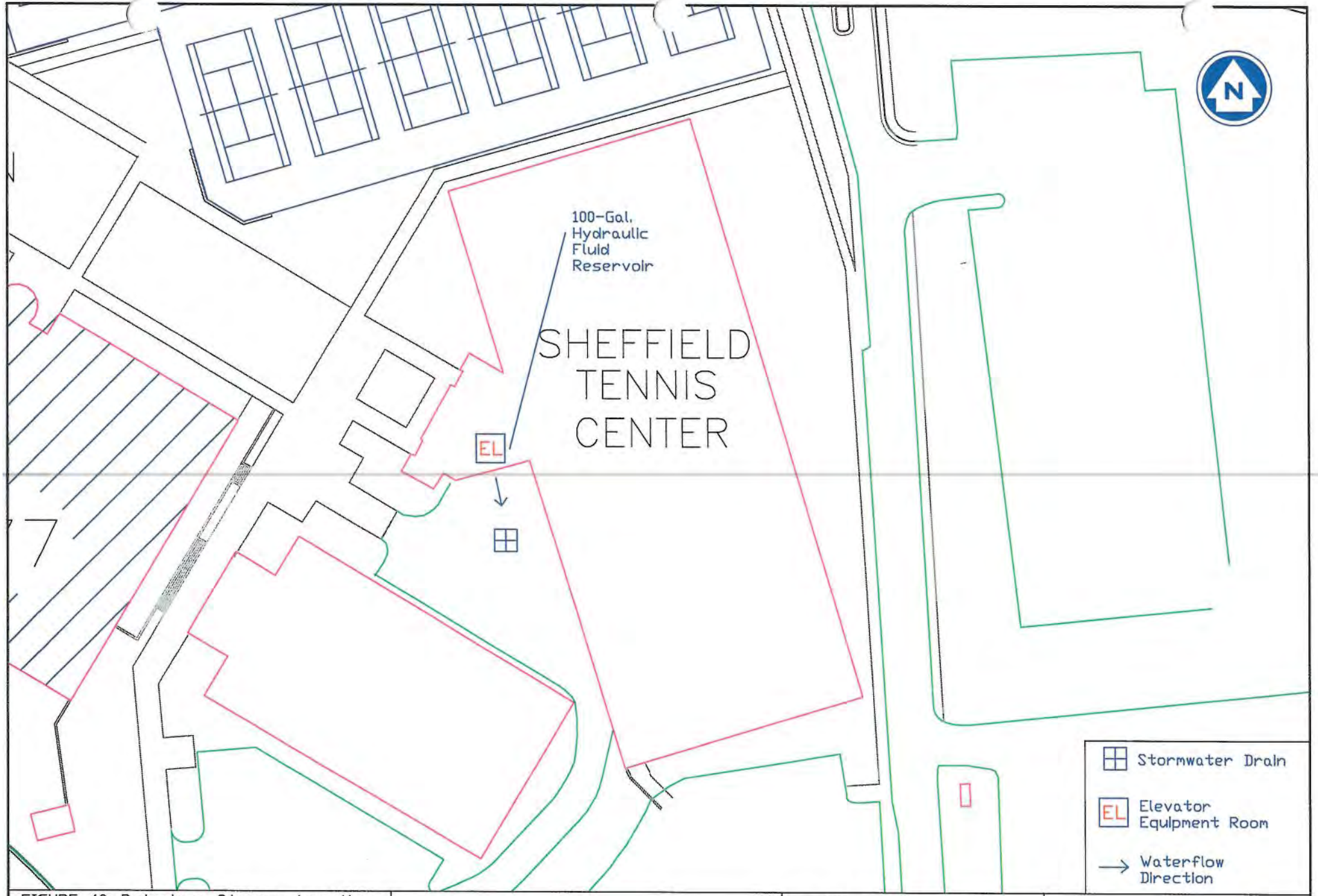

FIGURE 40: Petroleum Storage Locations

Tennis Center Indoor (Sheffield)
Duke University
Durham, North Carolina

BENSINGER & GARRISON
ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 40

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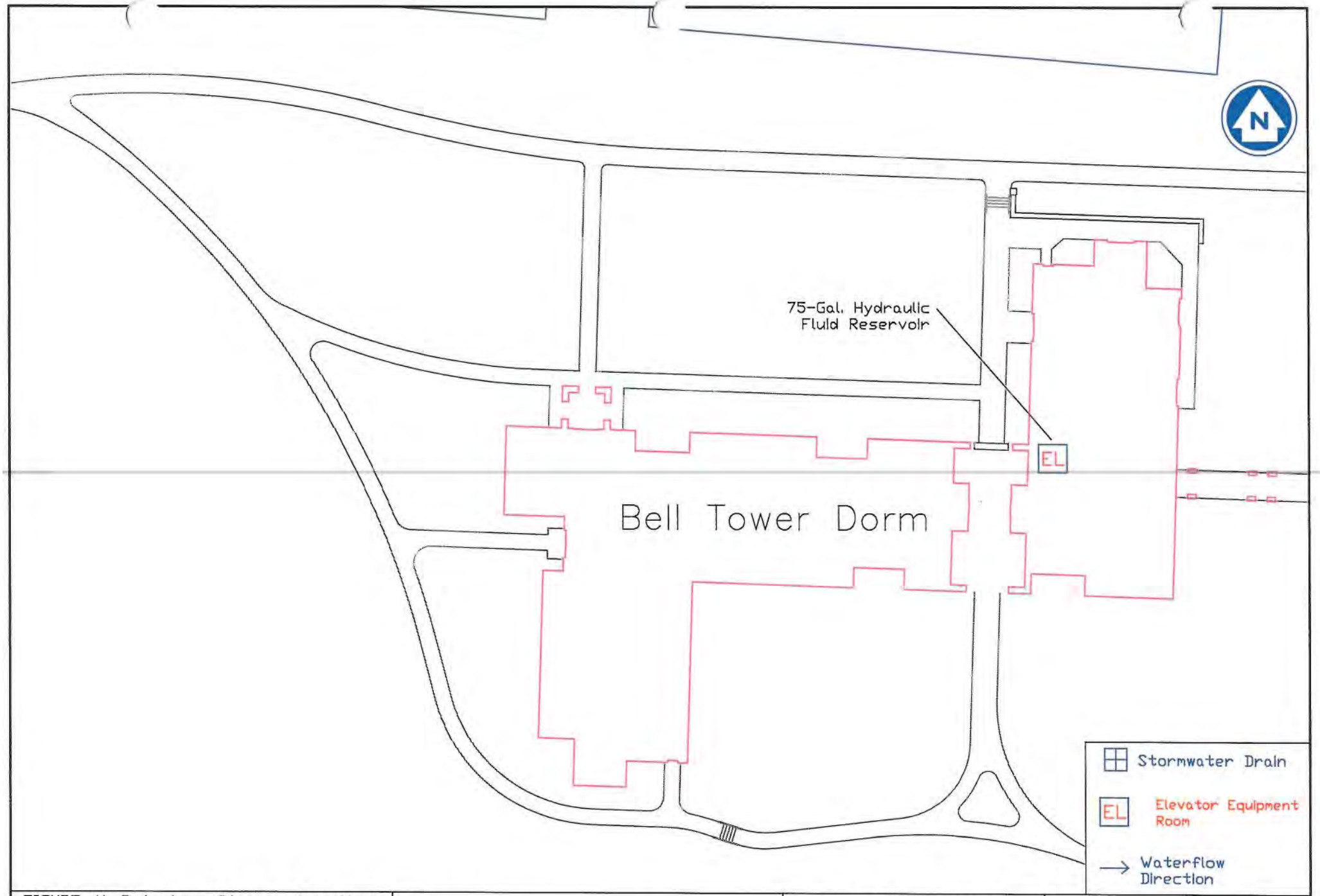

FIGURE 41: Petroleum Storage Locations

Bell Tower Dorm (7236)
Duke University
Durham, North Carolina

BENSINGER & GARRISON
ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 41

SCALE: Not to Scale

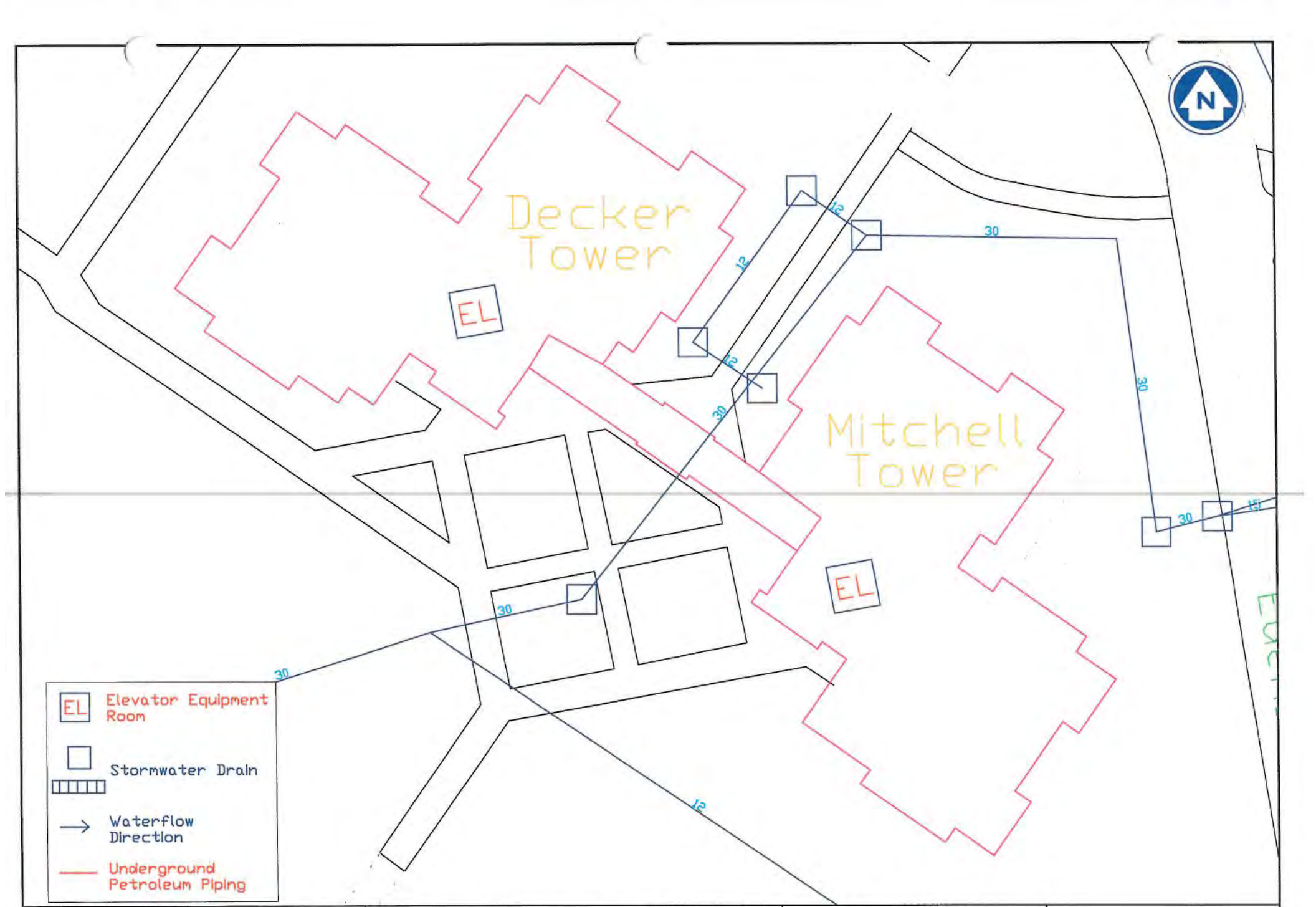

FIGURE 43: Petroleum Storage Locations

Decker Tower (7783) &
Mitchell Tower (7784)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
LEAF ENVIRONMENTAL & ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 43

SCALE: Not to Scale

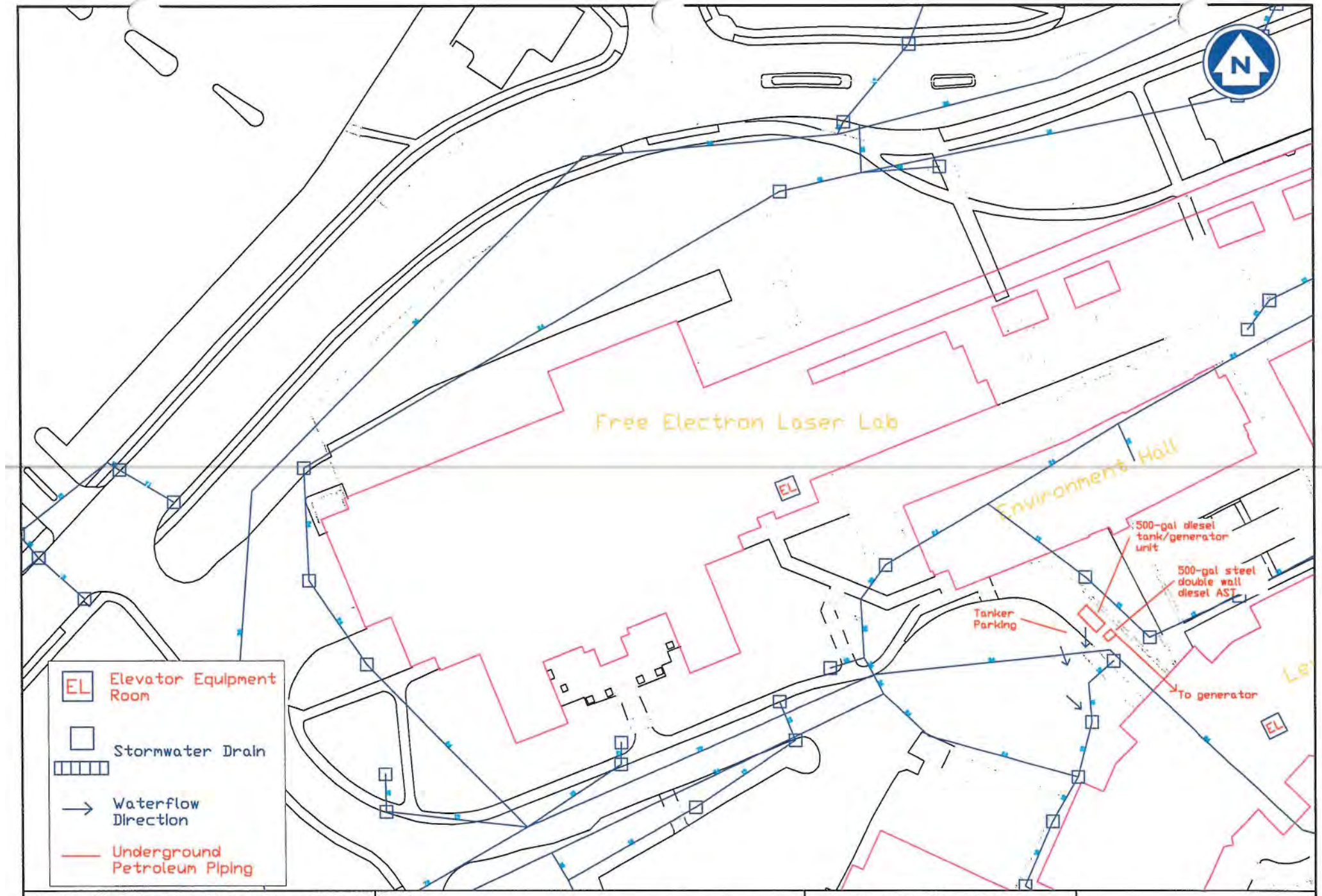

FIGURE 44: Petroleum Storage Locations

FELL Building (7780)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
LEAF ENVIRONMENTAL & ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 44

SCALE: Not to Scale

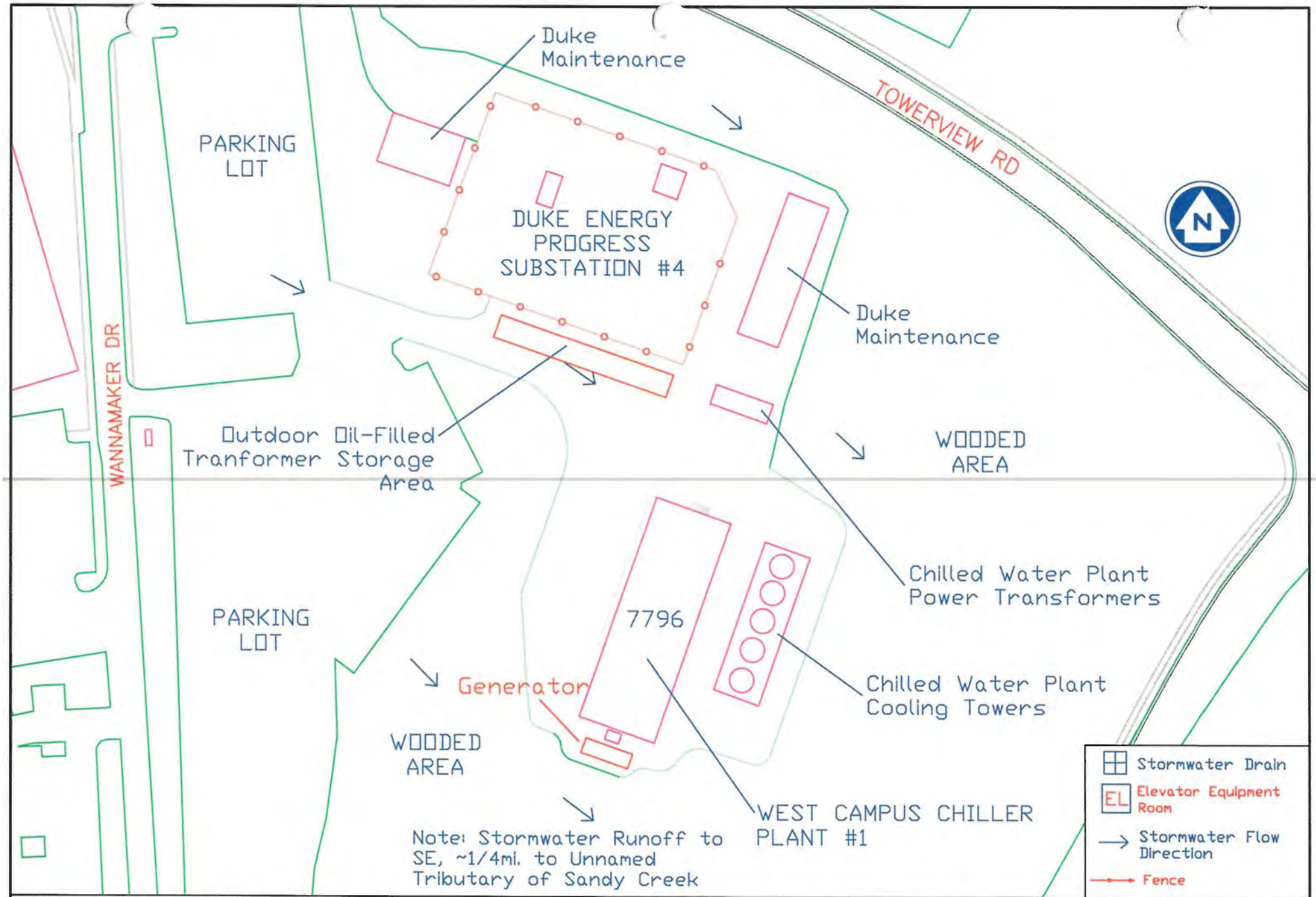

FIGURE 45: Petroleum Storage Locations

West Campus Chiller Plant #1 (7796)
Duke University
Durham, North Carolina

LEAF ENVIRONMENTAL & ENGINEERING, P.C.

PROJECT NO.: 137002
DATE: October, 2016
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 45

SCALE: Not to Scale

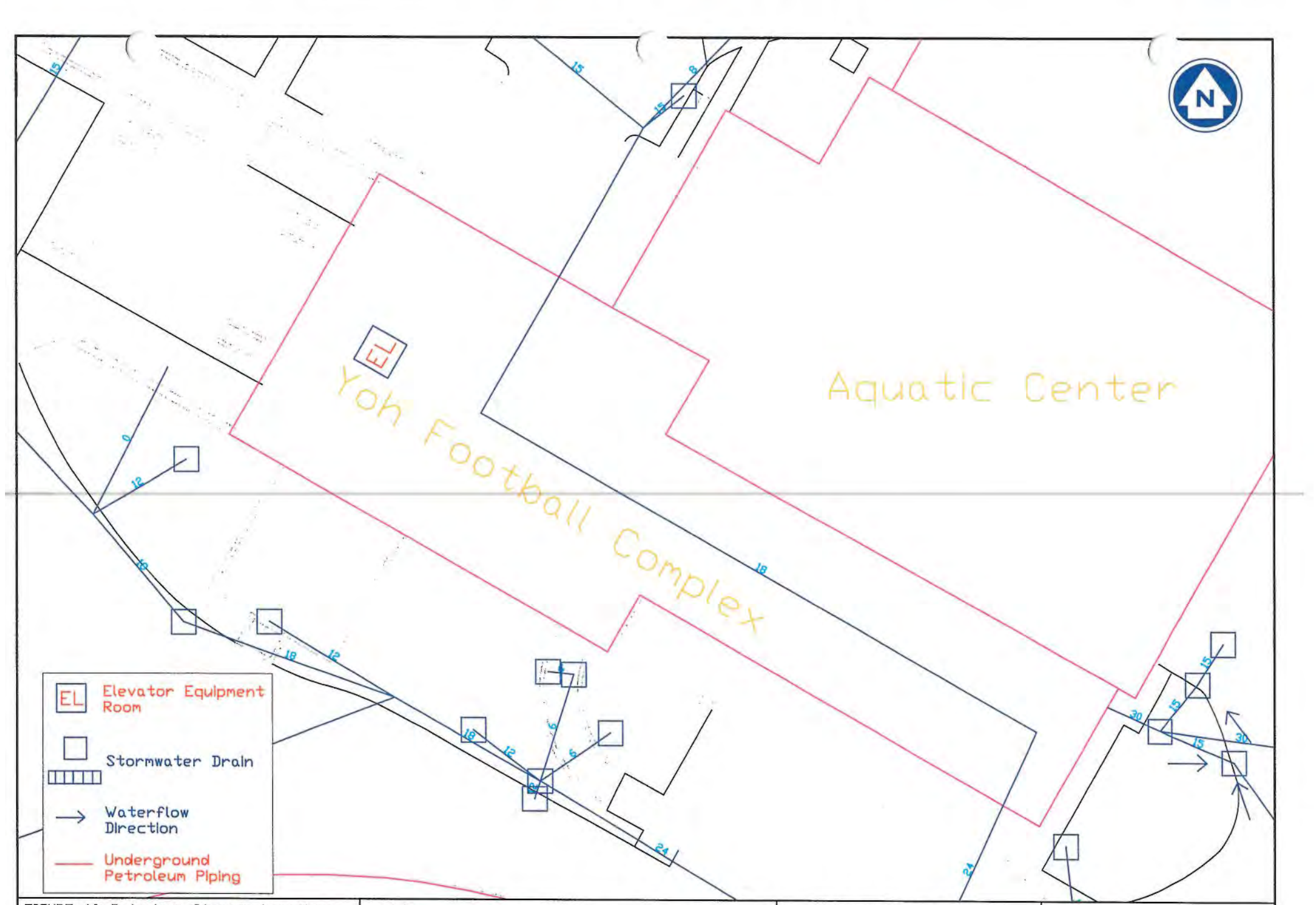

FIGURE 46: Petroleum Storage Locations

Yoh Football Center (7779)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
LEAF ENVIRONMENTAL & ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 46

SCALE: Not to Scale

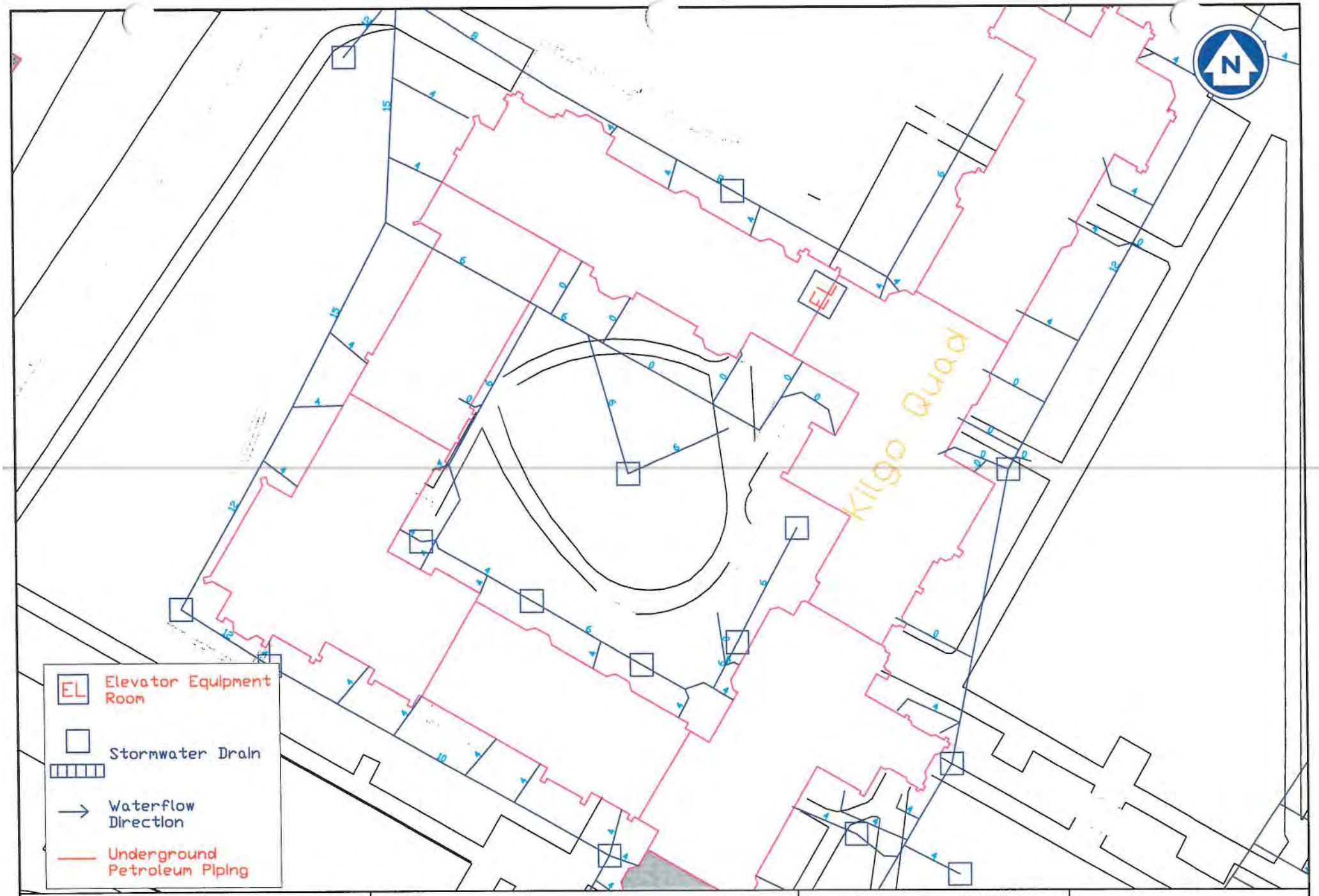

FIGURE 47: Petroleum Storage Locations

Kilgo Quadrangle (7713)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
LEAF ENVIRONMENTAL & ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 47

SCALE: Not to Scale

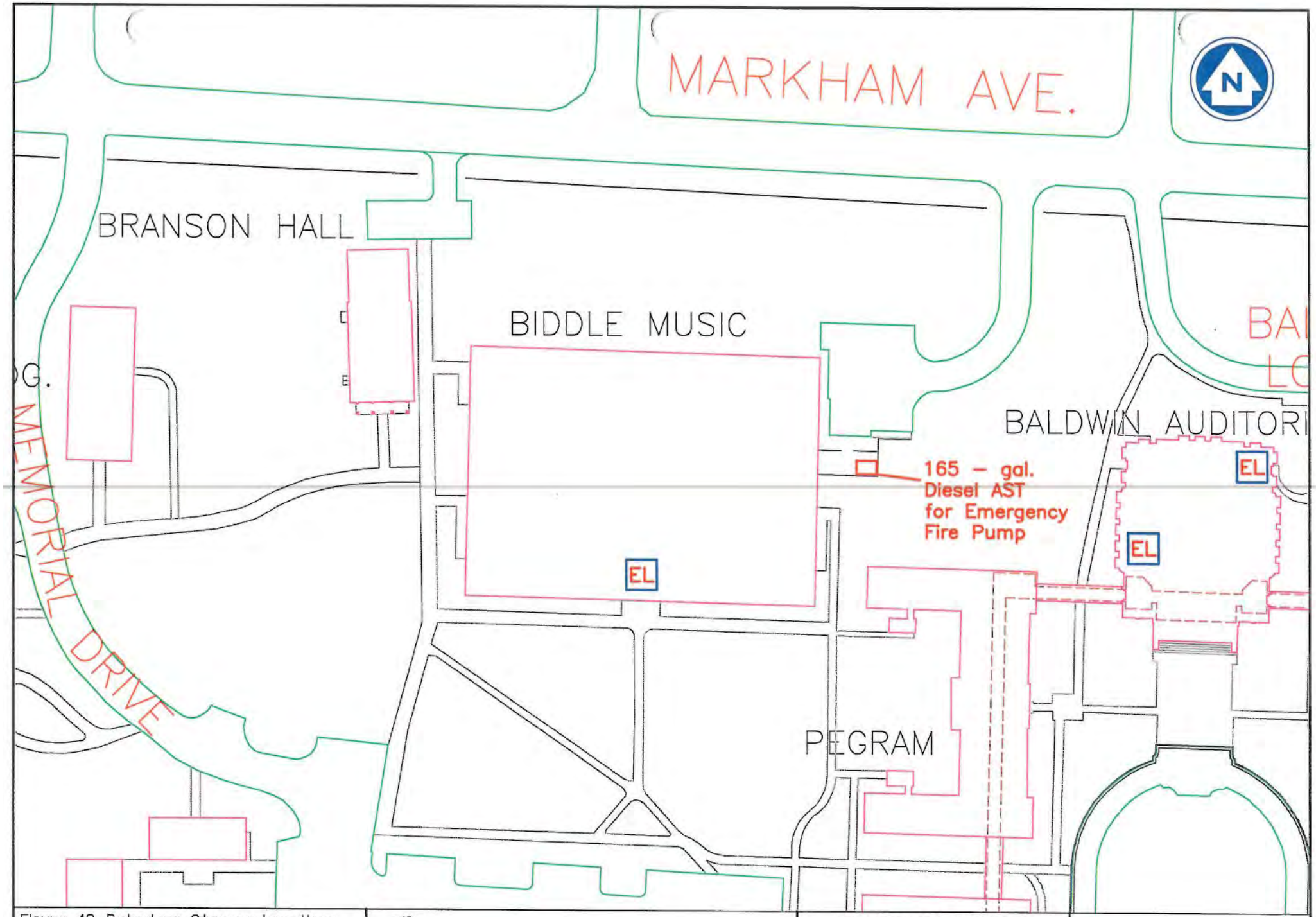

Figure 48: Petroleum Storage Locations

Biddle Music Hall (7232) & Baldwin Auditorium (7219)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
BLUEFIELD ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 48

SCALE: Not to Scale

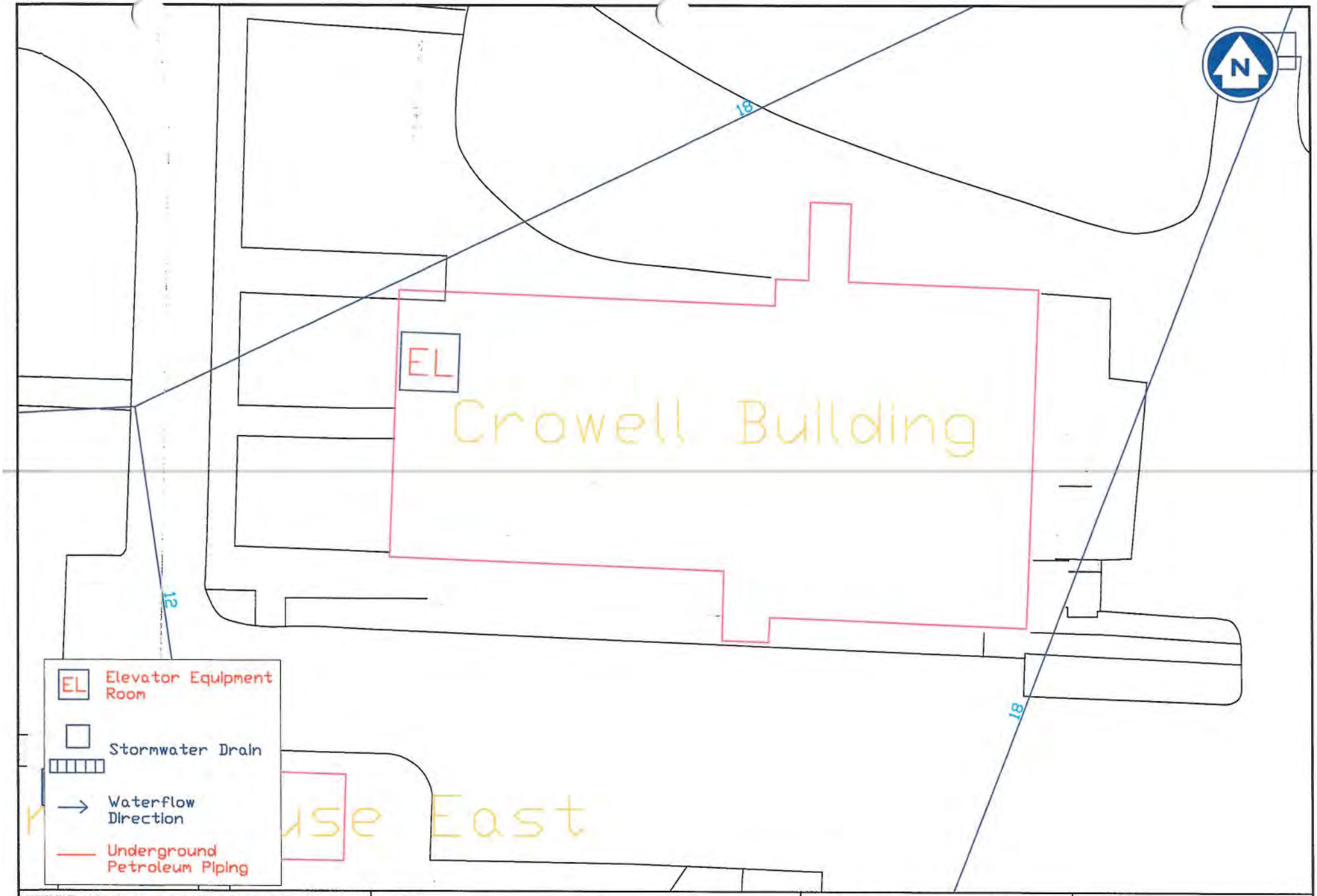

FIGURE 49: Petroleum Storage Locations

Crowell Building (7206)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
LEAF ENVIRONMENTAL & ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 49

SCALE: Not to Scale

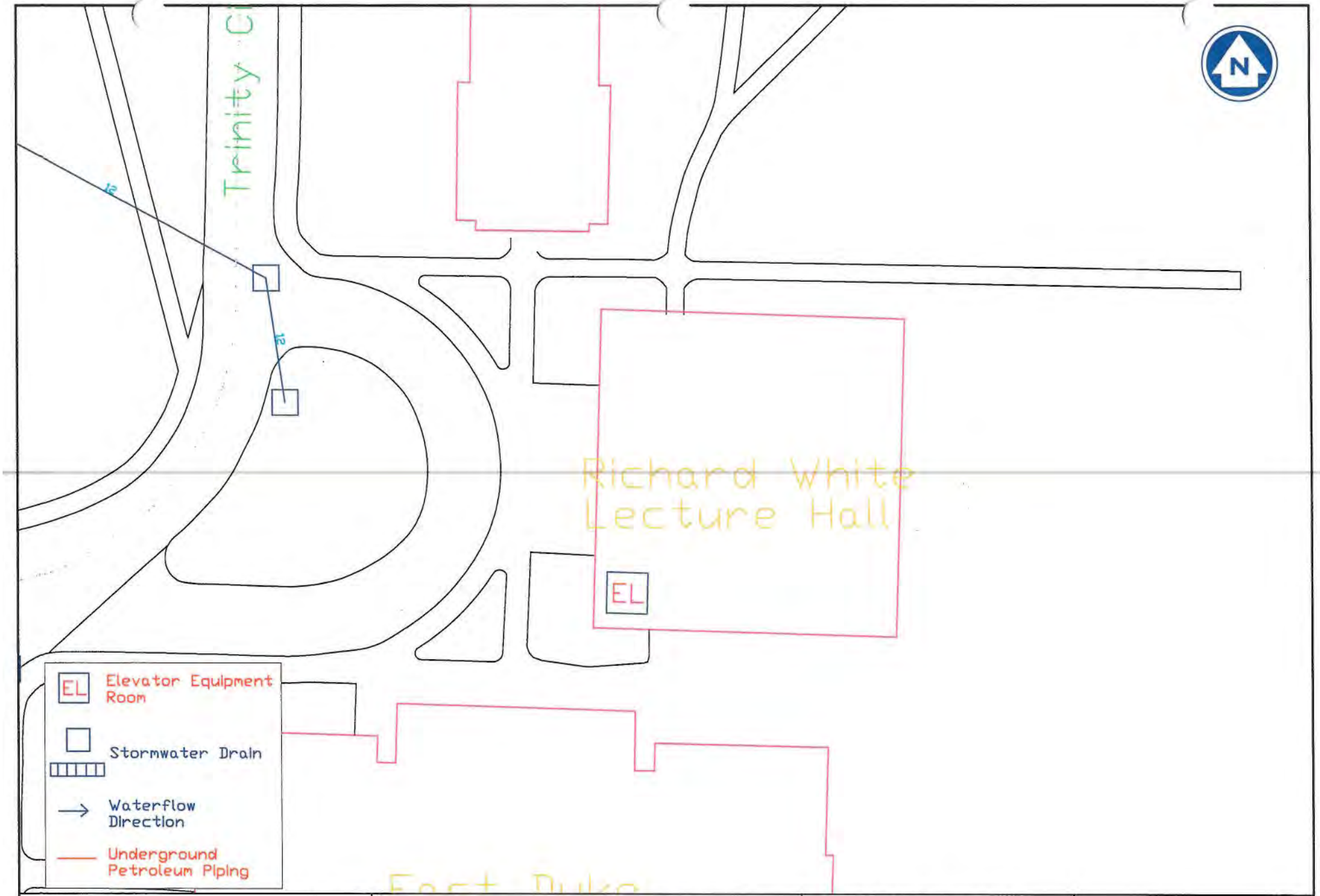

FIGURE 50: Petroleum Storage Locations

White Lecture Hall (7213)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
LEAF ENVIRONMENTAL & ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 50

SCALE: Not to Scale

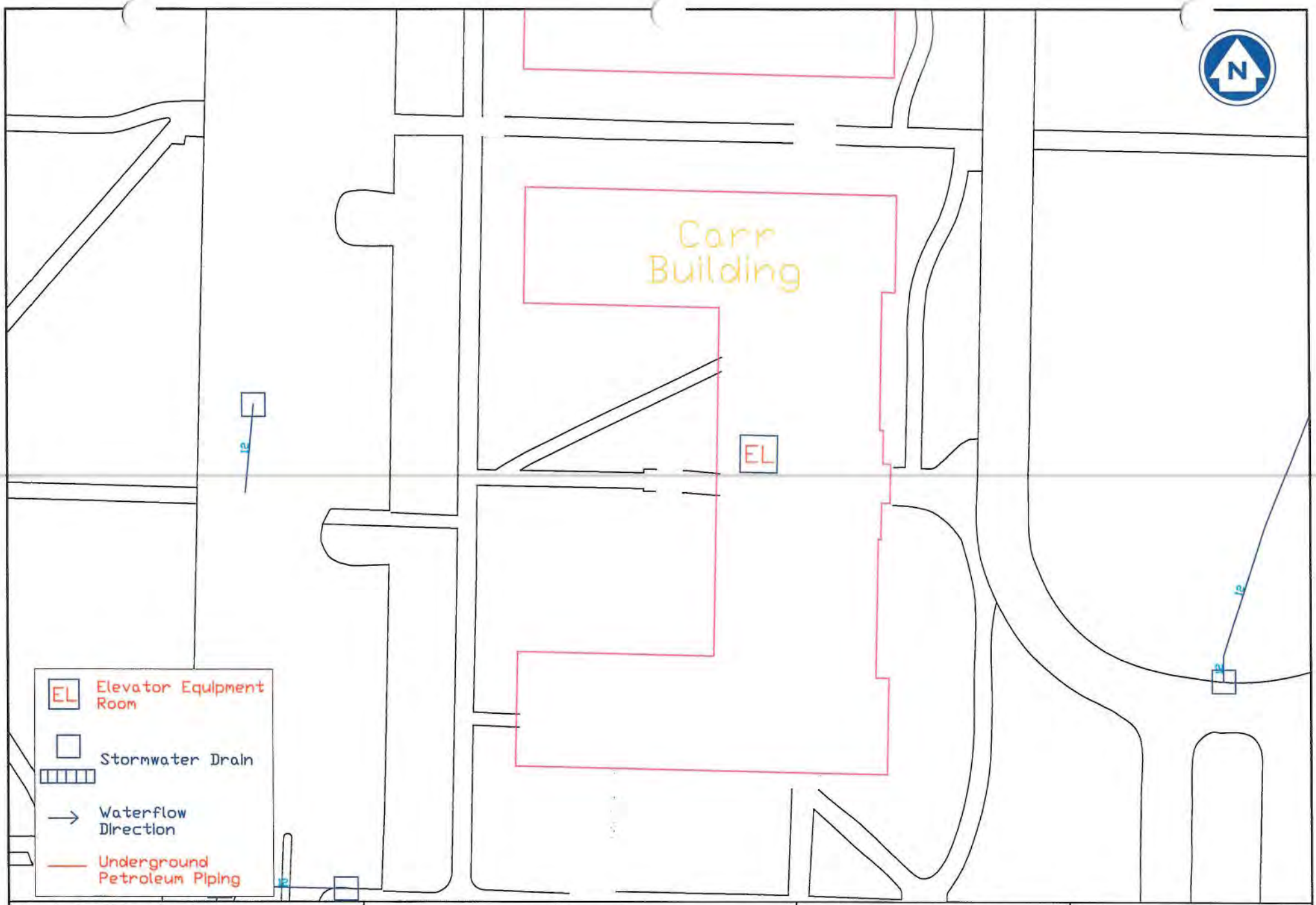

FIGURE 51: Petroleum Storage Locations

Carr Building (7214)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
LEAF ENVIRONMENTAL & ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 51

SCALE: Not to Scale

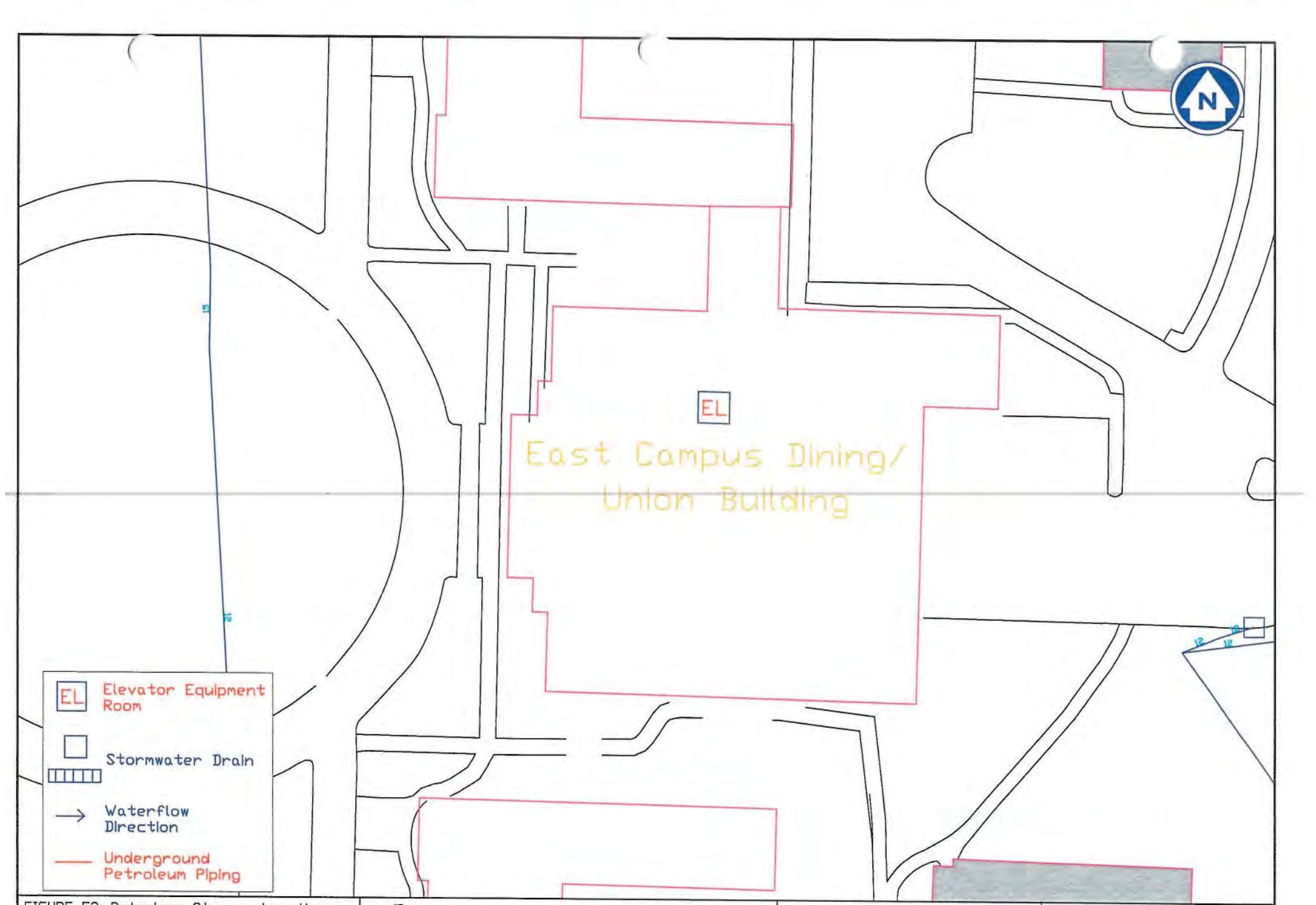

FIGURE 52: Petroleum Storage Locations

East Campus Dining (7222)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
LEAF ENVIRONMENTAL & ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 52

SCALE: Not to Scale

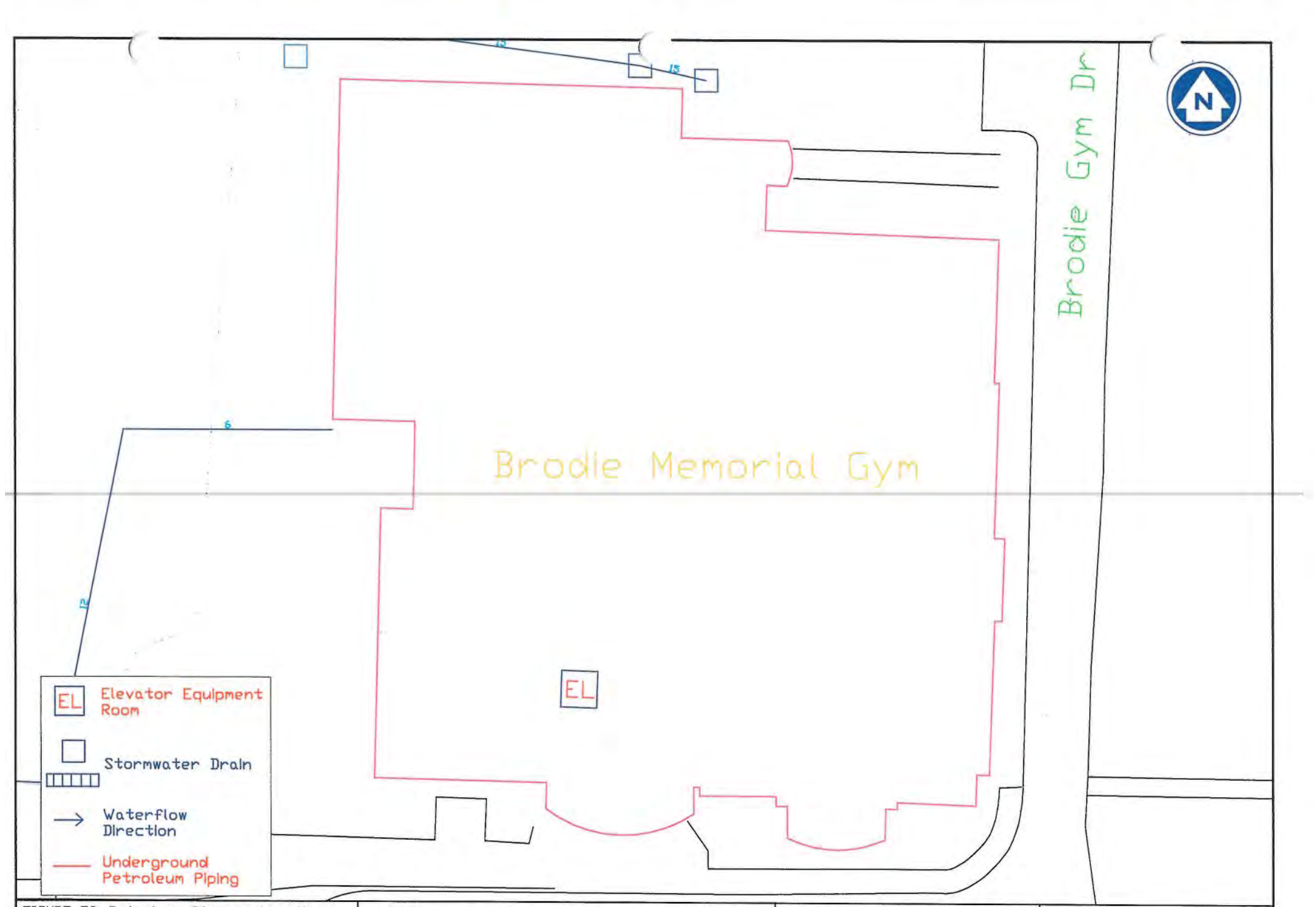

FIGURE 53: Petroleum Storage Locations

Brodie Memorial Gym (7226)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
LEAF ENVIRONMENTAL & ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 53

SCALE: Not to Scale

FIGURE 54: Petroleum Storage Locations

Academic Advising Center (7231)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
LEAF ENVIRONMENTAL & ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 54

SCALE: Not to Scale

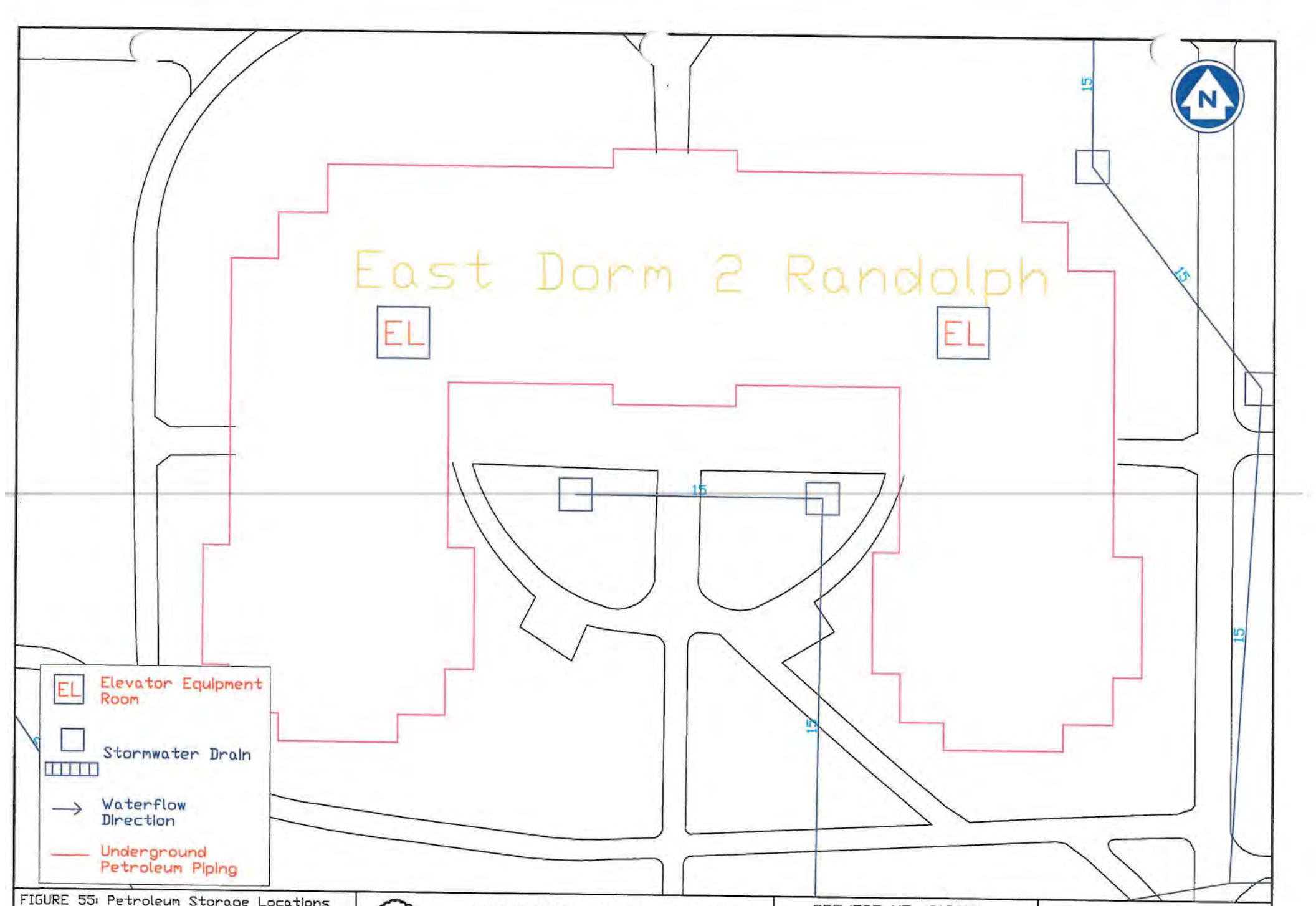

FIGURE 55: Petroleum Storage Locations

Randolph Dorm (7235)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
LEAF ENVIRONMENTAL & ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 55

SCALE: Not to Scale

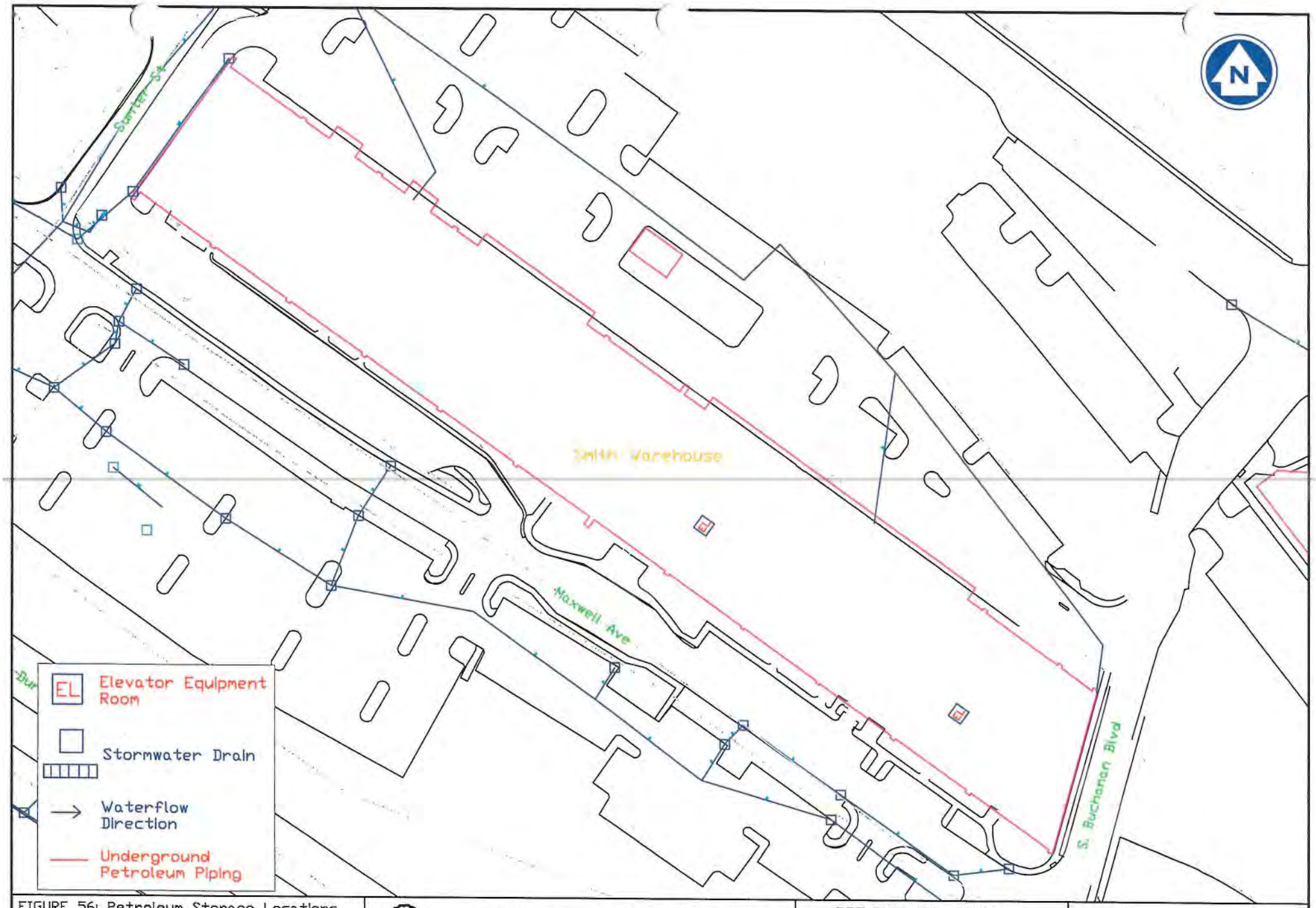

FIGURE 56: Petroleum Storage Locations

Smith Warehouse (7261)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
LEAF ENVIRONMENTAL & ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 56

SCALE: Not to Scale

FIGURE 57: Petroleum Storage Locations

Bevan Building (7262)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
LEAF ENVIRONMENTAL & ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 57

SCALE: Not to Scale

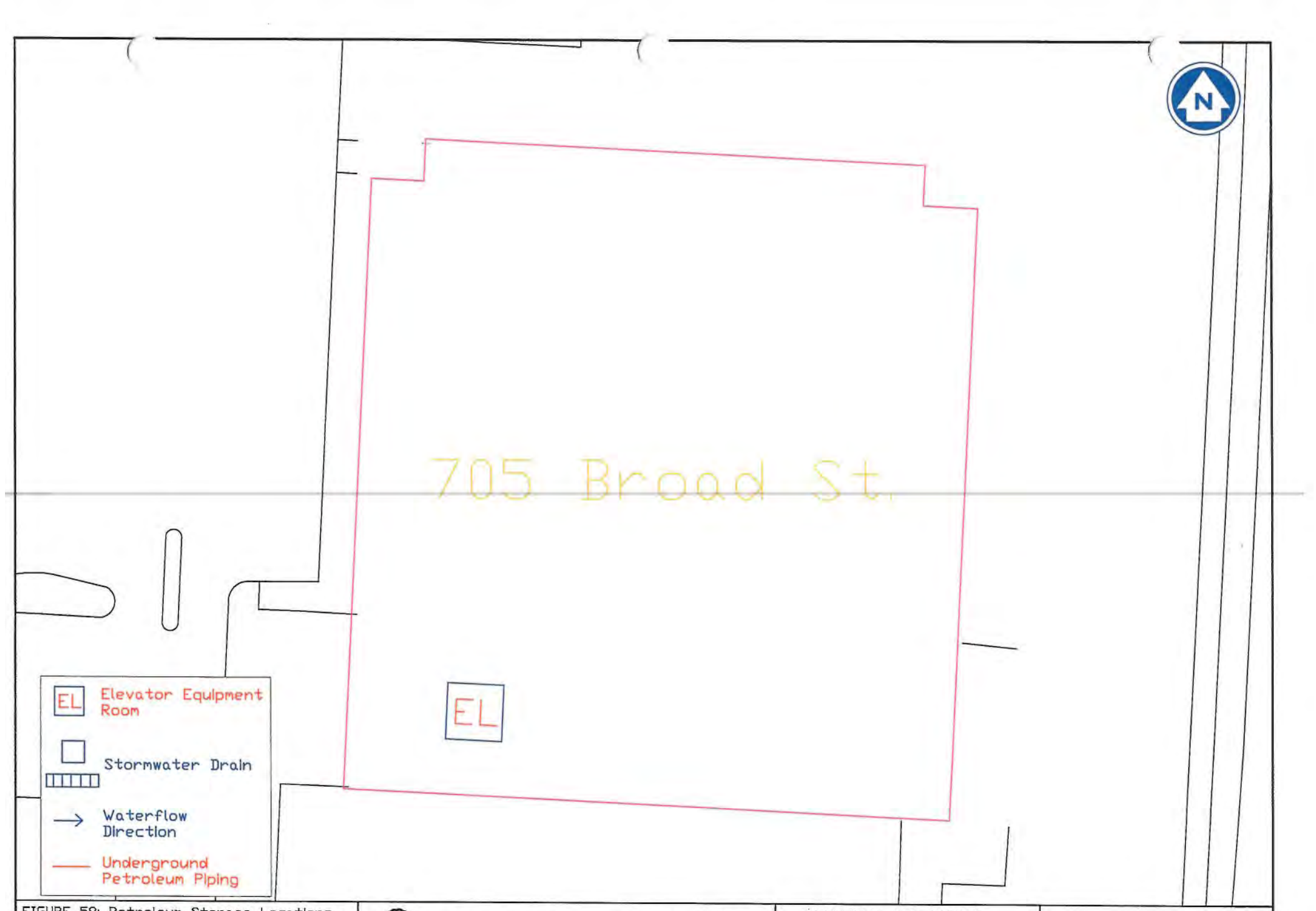

FIGURE 58: Petroleum Storage Locations

705 Broad Street (7275)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
LEAF ENVIRONMENTAL & ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 58

SCALE: Not to Scale

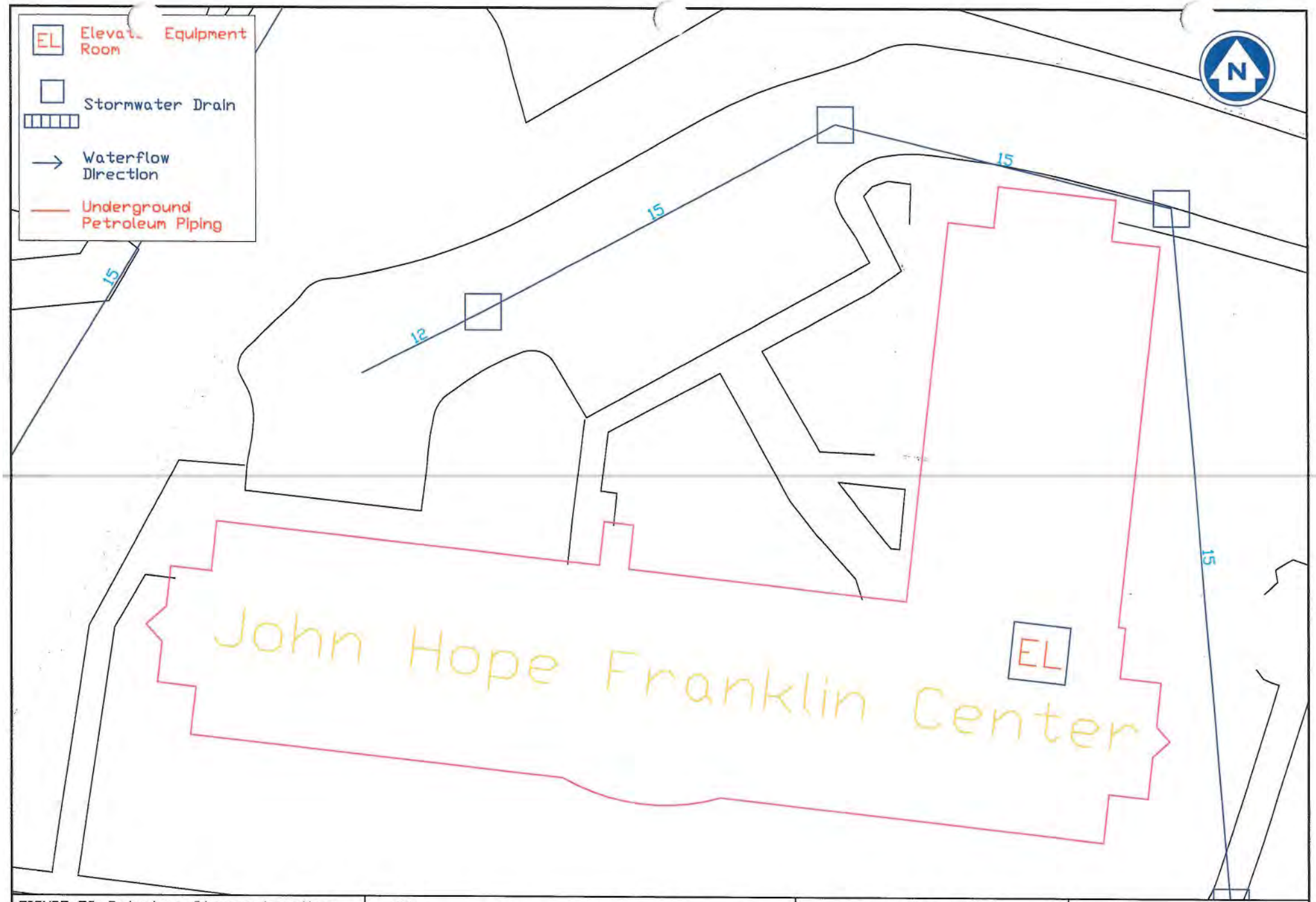

FIGURE 59: Petroleum Storage Locations

John Hope Franklin Center (7510)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
LEAF ENVIRONMENTAL & ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 59

SCALE: Not to Scale

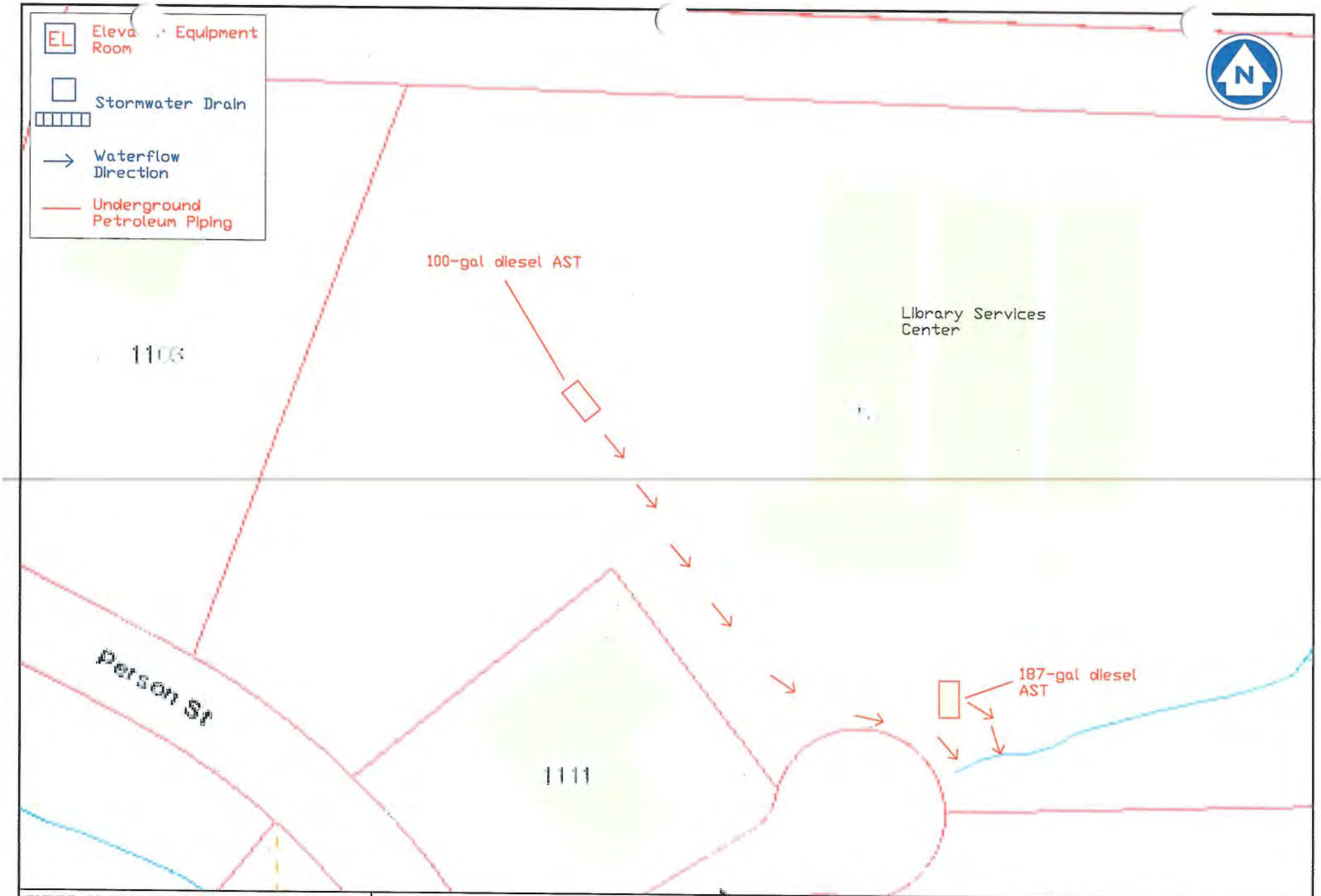

FIGURE 60: Petroleum Storage Locations

Library Services Center (7970)
Duke University
Durham, North Carolina

BENSINGER & GARRISON ENVIRONMENTAL, INC.
LEAF ENVIRONMENTAL & ENGINEERING, P.C.

PROJECT NO.: 218013
DATE: May, 2015
DRAWN BY: SRG
APPROVED BY: JHG
FILE: DU Fig 60

SCALE: Not to Scale

APPENDIX 1:

SPCC INSPECTION CHECKLIST

SPCC INSPECTION CHECKLIST

DUKE UNIVERSITY
DURHAM, NORTH CAROLINA

	YES	NO	COMMENTS
GENERAL Has there been any change in facility design, construction, operation, or maintenance since the last inspection? If yes, update the SPCC plan accordingly.			
Is there any new petroleum bulk storage at the facility?			
SPILL CLEANUP SUPPLIES Are the Spill Kits located in the areas identified in Section 5?			
Do the kits contain the items identified in Section 5 at a minimum?			
TANKER UNLOADING Are procedures in place to ensure a trained employee is present for the entire filling operation?			
Are procedures being followed to ensure adequate tank capacity such as manual tank level gauging?			
Verify integrity of portable secondary containment			
Verify that means to plug (close) storm drain at tanker unloading location is working properly (East Campus Steam Plant, Chiller Plant #2).			
Is there a physical barrier available, such as a chock, to prevent premature tanker truck departure in place?			
Are drip pads readily available for placing beneath each connection?			
Any sign of tanker leaks?			
OIL STORAGE AREAS Is documentation on file verifying the accuracy of tank float gauges or electronic monitoring systems within the last year?			
Are the tanks/drums and all associated valves and piping in good condition and free from leaks and excessive corrosion?			

OIL STORAGE AREA (cont'd)	YES	NO	COMMENTS
Are all tanks without double walls stored in appropriate locations inside the containment dikes, such that any spill will be contained?			
Are the dikes or double walls in good condition, showing no signs of leaks, damage, or excessive wear?			
Are there any signs of leaks or spills of petroleum?			
Is tank integrity testing per Section 7.3.1 up to date? ***Inspect entire tank shell for corrosion, if possible.***			
Are all secondary containment drain openings plugged or closed with valves locked in the closed position? ***Inspect captured stormwater prior to discharge from secondary containment. Document all drainage events.***			
Any sign of leaks or spills from the grease storage containers at the Washington Duke Inn or the R.D. Thomas Building? (Note the condition of the containers.)			
Are all Duke University owned oil–filled transformers in good condition, showing no signs of leaks, damage, or excessive wear?			

MONTHLY INSPECTION:

Inspect disconnected transformer storage at the West Campus Chiller Plant for the following:

- Leaks
- Excessive corrosion to transformers or oil filled medium voltage switches
- Erosion of soil under oil filled transformers and switches stored at the site
- Damage to transformers or switches
- Note if number of transformers stored has been reduced, is increasing, or no change
- Note if all transformers are stored within containment, or if remote means of containment are provided

Inspection results: _____

FOURTH QUARTER OF EACH YEAR (ANNUAL)

Review the SPCC Plan to ensure the procedures are being followed and if the Plan needs to be modified to reflect current conditions.

Review annual inspection and maintenance requirements, as recommended by the manufacturer, for all petroleum bulk storage and transfer equipment. Are all manufacturers' recommended inspection and maintenance requirements being completed?

Compare available spill response supplies and equipment with the list in Appendix 5 of this Plan. Are available spill response supplies and equipment adequate?

Verify that all recordkeeping as described in Section 9.0 of this Plan is being completed and filed as required.

Review Section 2.3 for outstanding items that require modifications to be compliant with 40 CFR Part 112 and note status below:

_____

_____

_____

_____

INSPECTORS:

_____ _____

Signature Date

_____ _____

Signature Date

APPENDIX 2:

SPCC REVIEW AND REVISION RECORD

APPENDIX 2:
SPCC REVIEW AND REVISION RECORD

Duke University
Main Campus
Durham, North Carolina 27708

Date: 11/14/08

Reviewed and Revised By: Tim W. Monroe - B+G

Revision(s) Required: New Facilities: Fuqua School of Business; Center for Athletic Excellence; East Campus Science Bldg; Biological Sciences Bldg.

Certification: I certify that this SPCC Plan has been reviewed and evaluated by:

Timothy W. Monroe, *P.E. on (date)* 11-14-08, *and*

that the Plan has/has not (circle one) been amended as a result.

Tim W. Monroe
Signature

Date: 7/26/10

Reviewed and Revised By: Tim W. Monroe

Revision(s) Required: Add: 55-gallon petroleum + used oil storage; Grease storage (used from kitchen); Emergency generator + AST relocated to Finch-Yeager from Biosciences. Elevator hydraulic reservoir locations; 0.1 filled transformer storage; East Campus Steam Plant Emergency Generator; GBH Course bulk petroleum storage

Certification: I certify that this SPCC Plan has been reviewed and evaluated by:

Tim W. Monroe, *P.E. on (date)* 7/26/10, *and*

that the Plan has/has not (circle one) been amended as a result.

Tim W. Monroe
Signature

APPENDIX 2:
SPCC REVIEW AND REVISION RECORD

Duke University
Main Campus
Durham, North Carolina 27708

Date: 11-14-13

Reviewed and Revised By: Jack H. Garrison, Jr. - B&G

Revision(s) Required: Revised various tank capacities, added Baldwin AST

Certification: I certify that this SPCC Plan has been reviewed and evaluated by:

Timothy W. Monroe, *P.E. on (date)* 11-14-13, *and*

that the Plan has/has not (circle one) been amended as a result.

Signature

Date: June 2015

Reviewed and Revised By: Jack H. Garrison, Jr. - B&G

Revision(s) Required: Changed Names & Phone #s. Added tanks at Library, Services Center and Environmental Hall. Added 37 buildings with elevators and associated drawings. Revised 2.3 to document new items to be corrected.

Certification: I certify that this SPCC Plan has been reviewed and evaluated by:

Timothy W. Monroe, *P.E. on (date)* June 16, 2015, *and*

that the Plan has/has not (circle one) been amended as a result.

Signature

APPENDIX 2:

SPCC REVIEW AND REVISION RECORD

Duke University
Main Campus
Durham, North Carolina 27708

Date: 11-14-16

Reviewed and Revised By: Jack H. Garrison, Jr.

Revision(s) Required: Updated to add petroleum storage at West Campus Chiller Plt. #1;

Certification: I certify that this SPCC Plan has been reviewed and evaluated by:

Tim W. Monroe, *P.E. on (date)* 11-14-16, *and*

that the Plan has/has not (circle one) been amended as a result.

Tim W. Monroe
Signature

Date: _____

Reviewed and Revised By: _____

Revision(s) Required: _____

Certification: I certify that this SPCC Plan has been reviewed and evaluated by:

_____, *P.E. on (date)* _____, *and*

that the Plan has/has not (circle one) been amended as a result.

_____
Signature

APPENDIX 3:

SPCC TRAINING RECORDS

APPENDIX 3:

SPCC TRAINING RECORD

EMPLOYEE	TRAINING DESCRIPTION	DATE	EMPLOYEE SIGNATURE	TRAINER SIGNATURE

APPENDIX 4:

CROSS REFERENCE TO 40 CFR PART 112

40 CFR PART 112 CROSS REFERENCE

CITATION	DESCRIPTION OF RULE	SECTION NUMBER	SECTION NAME
112.3(d)	PE certification	NA	Certifications
112.3(e)	Maintain copy of SPCC Plan at the facility	1.6	Plan Availability
112.4(a)	Release reporting to Regional Administrator	6.4	Written Reporting
112.5(a)	Amend plan when there is a change in facility	8.0	Plan Review & Amendment
112.5(b)	Review plan every 5 years at a minimum	8.0	Plan Review & Amendment
112.5(c)	PE certification of technical changes to Plan	8.0	Plan Review & Amendment
112.7	Full approval of management/committment of resources	NA	Certifications
112.7	Describe modification required under SPCC regs./include schedule	2.3	Proposed Modifications & Completion Schedule
112.7(a)(3)	Facility layout diagram	2.0	Oil & Chemical Product Storage Facilities
112.7(a)(3)	Facility description	2.2	Description of Oil Storage/Handling Facilities
112.7(a)(3)(iii)	Discharge controls	4.0	Petroleum & Chemical Spill Prevention Measures
112.7(a)(3)(iv)	Spill countermeasures - facility and contractor capabilities	5.1	Spill Containment /Response/Cleanup Materials
112.7(a)(3)(v)	Dispose of recovered materials in accordance w/ applicable requirements	5.2	Spill Response Procedures
112.7(a)(3)(vi)	Emergency contact list	6.2	Regulatory Agency Notification
112.7(a)(4)	Provide emergency notification procedures	6.0	Notification of Spill Events
112.7(a)(5)	Discharge response procedures	5.2	Spill Response Procedures
112.7(b)	Prediction of spill volume, rate of flow & direction	3.0	Spill Events, Containment & Spill Migration
112.7(c) & 112.8(b)(4)	Containment/diversion	4.2	Secondary Containment
112.7(d)(1)&(2)	Contingency plan/committment of manpower & resources	NA	Management Approval
112.7(e) & 112.8(c)(6)	Inspections, tests & records & procedures	7.0	Inspection & Testing
112.7(f)	Personnel training & annual briefings	10.0	Training
112.7(f)(2)	Designate person accountable for discharge prevention	1.4	Spill Plan Team
112.7(g)(1)	Fencing, locking & guarding facility	11.0	Security
112.7(g)(2)	Master flow valves/drain valves closed & secured	11.0	Security
112.7(g)(3)	Lock starter control pumps	11.0	Security
112.7(g)(4)	Cap or blank flange pipeline loading/unloading connections	11.0	Security
112.7(g)(5)	Adequate facility lighting	11.0	Security
112.7(h)(1)	Loading/unloading - Quick drainiage system for containment	4.4	Tank Filling/Unloading
112.7(h)(2)	Interlocked warning light/physical barrier for tankers	4.4	Tank Filling/Unloading
112.7(h)(3)	Inspect tanker lowermost drain & all outlets	4.4	Tank Filling/Unloading
112.7(i)	Field-constructed tanks - brittle fracture analysis	7.3	Testing
112.7(j)	Conformance with applicable requirements/ State rules	Various	Various
112.8(b)(1) ; 112.8(c)(3)(iii)	Facility drainage - restrain with manual valves	4.2	Secondary Containment
112.8(b)(2) & 112.8(c)(3)(ii)(iii)	Facility drainage - inspection before discharge/supervised drainage	4.2	Secondary Containment
112.8(b)(3) & (4)	Facility drainage - undiked areas	4.2	Secondary Containment
112.8(b)(5)	Treatment of drainage water - engineer to prevent discharge	NA	Drainage Treatment Systems

40 CFR PART 112 CROSS REFERENCE

CITATION	DESCRIPTION OF RULE	SECTION NUMBER	SECTION NAME
112.8(c)(3)(iv)	Facility drainage - maintain drainage records	4.2	Secondary Containment
112.8(c)	Containers - material of construction compatible with contents	2.1	Industry Standards
112.8(c)	Containers - material of construction compatible with contents	2.2	Description of Oil Storage & Handling Facilities
112.8(c)(4)	Buried tanks - corrosion protection/inspections	2.2; 7.2;7.3	Buried Tanks/Inspections/Testing
112.8(c)(5)	Partially buried tanks - corrosion protection	NA	Partially Buried Tanks
112.8(c)(6)	Inspections/Testing	7.2; 7.3	Inspections/Testing
112.8(c)(7)	Defective internal heating coils - control leakage	NA	
112.8(c)(8)(i - iv)	Engineer/update tanks with liquid level sensing devices	4.3	Fail Safe Measures
112.8(c)(v)	Testing of liquid level sensing devices	7.3	Testing
112.8(c)(9)	Treatment systems - inspect for upsets	7.1; 7.2	Inspections
112.8(c)(10)	Promptly correct tank leaks from seams, gaskets, pumps, etc.	7.1;7.2	Inspections
112.8(c)(11)	Location/containment for portable & mobile tanks	2.2	Mobile tanks
112.8(d)(1)	Buried piping - coating & cathodic protection	4.3	Buried Piping
112.8(d)(2)	Cap or blank flange pipeline loading/unloading connections	11.0	Security
112.8(d)(3)	Proper design of pipe supports	2.2	Description of Oil Storage/Handling Facilities
112.8(d)(4)	Regular inspection of above ground valves & piping	7.1; 7.2	Inspections
112.8(d)(4)	Inspection/integrity/leak testing of buried pipe	7.1; 7.2; 7.3	Inspections/Testing
112.8(d)(5)	Warning vehicles about aboveground piping	NA	

APPENDIX 5:

AVAILALABLE SPILL RESPONSE SUPPLIES & INVENTORY

- OESO SPILL BAG
- OESO ROOM 113

SPILL BAG INVENTORY
--(*UPDATED 03/18/2009*)

PPE

1.) Yellow Tyvek Suit --(2)
2.) Tyvek Sleeves --2 pairs
3.) Tyvek Boot Covers --3 pairs
4.) Yellow Rubber Boot Covers --1 pair
5.) Bata Superpoly Steeltoe Boots --1 pair
6.) Safety Glasses
7.) Earplugs
8.) Mercury Respirator Cartridges --1 pair
9.) Defender Respirator Cartridges --1 pair
10.) SilverShield Gloves --2 pairs
11.) Neoprene Gloves --2 pairs
12.) *Latex gloves --4 pairs
13.) *Thin Nitrile Gloves --4 pairs with optional over gloves

EQUIPMENT

1.) Flashlight
2.) Pig Putty
3.) Sponge
4.) Duct Tape
5.) Spilfyter Chemical Classifier Strips --(4)
6.) Caution Warning Tape
7.) Insta-check pH Paper
8.) 4-in-1 Screwdriver
9.) Assorted Pens and Markers
10.) North American Emergency Response Guidebook
11.) Standard Operating Procedures including
-Site-specific Respiratory Protection Policy for OESO Spill Response
-Spill Response Respirator Selection Guidance (Sept 2007)
-Oklahoma State University Chemical Guide (Glove and chemical clothing permeation data)
12.) NIOSH Pocket Guide To Chemical Hazards

ABSORBENTS

1.) Universal Absorbent Sock --3ft.
2.) Universal Absorbent Pads --(4)

*We no longer stock latex or thin nitrile gloves. Instead, we stock NeoPro gloves. When you need to restock, the recommend amount to have in your spill bag is 8 pairs.

INVENTORY OF SPILL RESPONSE SUPPLIES

In Room 113

4 SCBA air paks with extra bottles
HEPA vacuum with attachments
Mop bucket

In Reactives Room

First doorway:

Broom, rakes, mop, shovels

Bottom shelf
1) Yellow Tyvek, Small
2) Yellow Tyvek, Medium
3) Yellow Tyvek, Large
4) Yellow Tyvek, Xtra-Large
5) Yellow Tyvek, 2X
6) Biohazard Spill Control –red bin containing red Z fluid control solidifier, biohard spill jump kit, collection of small and large biohazard bags, masks
7) Hazardous Drug Spill Kit –red bin containing safety goggles, plastic containers for disposal of sharps, plastic disposable pans/scrapers, absorbent pads, one gown, chemo spill bags
8) First aid kit
9) Plastic containers

Second Shelf
1) Pig putty, ph paper
2) Ziploc bags, Classifier strips
3) Bleach and spray bottle, duct tape
4) Latex over boots, sponges
5) Respirator wipes

Third Shelf
1) Gloves: Chem Master, Thick Nitrile, Silver Shield (with aprons)
2) Respirator cartridges: Mercury, Organic Vapor
3) Safety glasses, ear plugs

In second doorway:

Bag of Cell-u-Sorb and Oil gator with shaker bottles
Oil drip Pan
Hard Hats

Bottom Shelf
1) Generator
2) Tool Box – containing : Black and Decker tire inflator, bucket opener, rubber mallet, metal hammer 8" file, assorted non-sparking bung wrenches, crescent wrenches, sledge hammer, assorted Screwdriver, rubber door stopper, blade scraper, assorted mechanical pliers, breaker bar/ drum opener, Extension cord

Second Shelf
1) Drum Patching—bin contains: bottle of one hole rubber stoppers with toggle bolts, bottle of self taping Screws with rubber washers, bottle of rubber stoppers, bag of wooden dowels
2) Simple green soap and brushes, wheel chock

3) Garden hoses with attachments
4.) Scene Control—bin contains: red hazmat tape, caution tape, string, traffic vests, flashlight, pocketknife, Chemical spill sign

Third Shelf
1) Oil only spill pads
2) Acid / Base spill pads/booms
3) Plug Rug
4) Empty gas can

Fourth Shelf
1) Universal spill booms/pillows
2) Oil only spill booms

Third Room:

1) Shovels, brooms, mops, scraper, crowbar, bolt cutter, drum up-ender
2) Fan and hose
3) Halogen lights
4) Plastic sheeting, pool, fencing and stakes

In the bay by the back door:

1) Rubbermaid cart
2) Mercury vacuum cart
3) Traffic cones
4) Blue bin of spill dry

OESO CHEMICAL RELEASE RESPONSE POLICY

October 2011

This document describes the administrative procedures for response by OESO personnel to chemical releases throughout the University and Medical Center. This policy updates and replaces all previous versions and is effective until updated. All personnel assigned to spill response duties are responsible for reading, understanding, and complying with this policy.

Assignment of Duties:

A schedule for response duties will be prepared by the Spill Response Coordinator. The schedule can be viewed using the "Spill Response" tab in the OESO Spill Response Calendar (Calendar). Persons who desire changes after the schedule is posted are responsible for arranging for their own standby. It is the responsibility of the individual responder to plan their vacation and PTO schedule accordingly. The Spill Response Coordinator will make the appropriate changes on the Calendar.

Assignments will be based upon the abilities, training and knowledge of the individual responder. No responder will be charged with duties for which training has not been provided. Responders are comprised of OESO personnel from Occupational Hygiene and Safety, Environmental Programs, and Laboratory Safety. Assignments will be one week in duration and will be made in following classifications:

Spill Response Coordinator - The assigned tasks include scheduling responder duties, coordinating responses, doing follow-up to make sure situations are appropriately resolved, and conducting or arranging for monthly training. These tasks can be delegated.

Daytime Responder - This duty is assigned to biweekly and staff employees on a rotating basis, and applies only during normal working hours. The responder, upon notification of an emergent problem, shall go to the scene, make necessary observations, and initiate the appropriate response action. Response actions may include spill cleanup, calling for additional spill response personnel, asking for cleanup directions from more knowledgeable employees, preparing for initial evacuation, contacting the Emergency Coordinator, etc.

NOTE: It is the responsibility of the out going daytime responder to deliver the spill phone to the current on-call responder by 8 AM Monday morning. If the current daytime spill responder does not receive the spill phone by 8:30 AM Monday morning, they are responsible for tracking down the out going responder for the spill phone.

After Hours Responder - Staff personnel will be assigned this responsibility. The assignment of after hours responibility is one week in length, running from 5:00 Monday afternoon to 5:00 the following Monday afternoon. The duty of an After Hours Responder is the same as that of the daytime responder for incidents which occur after working hours and during weekends/holidays.

Availability

Daytime - It is imperative that two responders be available for immediate response between the hours of 8:00 AM until 5:00 PM. Critical periods are normally at the beginning and end of each day, as well as lunch time. Each team of daytime responders will decide how they will support each other to assure responder presence. They will keep the Spill Response Coordinator informed of their individual availabilities. In the case of unresolvable conflicts, the responder is responsible for ensuring coverage and informing the Spill Response Coordinator of the changes.

Reserve Responders – Daytime reponders who are not "on-call" should be available to respond to a release or spill as needed. The daytime responder reserve will be called into service prior to any afterhours responders.

After Hours - The After-hours responder is not normally expected to have response duties during the working day, he or she may, upon agreement, fill in for the daytime responder. In the case that the Spill Response Coordinator or Alternate cannot be available, the After-hours responder will assume the role.

Unexpected Absences

Responders who experience an unexpected absence (due to illness, death in the family, etc.) while assigned response duties are responsible for notifying the Spill Response Coordinator as soon as possible about the absence. The Response Coordinator will arrange for an alternate responder.

Cellular Phones - Daytime

Daytime spill phones (919-812-9021 and 9022) are to be under the control (i.e. on the body) of the on call spill responders during regular business hours (8 AM to 5 PM) during the work week. The daytime spill phones are not to be taken off campus after 5 PM (i.e leave them on your desk). The daytime spill phones shall not be left in personnel vehicles at any time.

Cellular Phones - Afterhours

Afterhours spill phone (919-417-0263) is to be under the control of the afterhours spill responder during the hours of 5 PM and 8 AM at all times. The afterhours spill phone shall not be left in personnel vehicles at any time.

Dispatch of Responders to Chemical Releases

In order to ensure timely response to spills by trained personnel, the OESO and the Duke University Police Department (DUPD) have established the following notification procedure:

Duke employees are instructed in the "Emergency Response and Incident Reporting Guide" to dial 911 in the event of a major chemical spill. Employees are instructed to be prepared to tell the DUPD dispatcher what chemicals are involved, how much was spilled, where the spill is located, the nature of any injuries, what control measures have been taken, their name, and a call back number at which they can be reached.

To activate the spill response, the DUPD dispatcher calls one of two phone numbers:

(919)684-2794 During normal working hours (0800-1700hrs Monday-Friday, except for Medical Center designated holidays). This line is continuously monitored by OESO clerical staff during these hours.

(919) 417-0263 After hours, on weekends or holidays. This is a cellular phone carried by one of the After Hours Responders.

The person answering the phone will take down the pertinent information and pass it on to the Spill Response Coordinator and daytime responders, or initiate a response if functioning as an After Hours Responder.

In some cases, OESO will receive direct calls from the person reporting the incident. OESO clerical staff will take the information and, if appropriate, advise the caller to contact DUPD at 911.

Spill Vehicles and Supplies

Any OESO personnel can use department pick-up trucks to respond to spills. In the event of a large spill or the need to the mercury vacuum, OESO-EP vehicle 306 will be used.

In order to insure that the necessary materials are available, all spill responders are responsible for notifying the Spill Response Coordinator or the designated procurement individual of any materials used from the main office during a spill.

Normal Working Hours Response

When a spill is called in by the DUPD, the OESO clerical staff will begin filling out the Hazardous Materials Incident Response Form based on the information provided over the phone. If the call does not come from the DUPD, the OESO clerical staff will record the necessary incident information and then request that the caller notify the DUPD. The Hazardous Materials Incident Response Form will be given to the Spill Response Coordinator who will decide if more information is needed before initiating a response.

In the event of a chemical release the responders are to be contacted in this order:

1. contact the daytime responders
2. contact a daytime reserve responder
3. contact the after-hours responder

The first responder to a spill will determine if there is a hazardous situation and decide if and what level of assistance is needed. If a responder on a spill needs assistance, he or she should notify the Spill Response Coordinator, who will arrange for additional support.

Responders should ensure that they have sufficient information, if possible, about the released chemical prior to arriving on site. This information is important so that responders can plan for the necessary personal protection equipment and necessary cleanup materials. If not, they should contact the Spill Response Coordinator for assistance in finding the necessary information. The OESO responder should attempt to be on the scene in under *15 minutes*. The responder's initial responsibilities should be to size up the chemical release, decide on an action plan, and summon additional help if needed. The responder should write a brief description of the incident on the Hazardous Materials Incident Response Form. This serves as the initial Health and Safety Plan for the spill if additional response is required. Responders should follow all SOP's for spill response that may exist external to this document. After the cleanup is complete, the responder should fill out the remainder of the Hazardous Materials Incident Response Form and submit it to the Spill Response Coordinator for review.

After Hours Response

After hours response duties are equivalent to those of the Daytime Responders described above. Because of the lack of additional resources, a person assigned these responsibilities must be prepared to exercise a greater degree of judgment in resolving the problem. The following guidance will be helpful:

- The After Hours Responder may attempt to manage the problem over the phone, either through the identification of other available resources or by providing guidance for self management. If the After Hours Responder or DUPD personnel have ***any*** doubts about the effectiveness of phone resolution, the After Hours Responder must respond in person.

- The After Hours Responder must be prepared to respond to the site of the problem within a reasonable amount of time with no physical or mental impairment. The After Hours Responder will control their personal activities accordingly.

- If, upon evaluating the problem, the After Hours Responder feels that additional help is needed, the After Hours Responder may call other afterhours or staff level personnel for assistance.

- Appropriate biweekly personnel may be called to respond only after the After Hours Responder has evaluated the situation to determine the level of response necessary and confirmed that other After Hours Responders are not available.

Response Documentation

As soon as possible after each response, the responder shall complete the Hazardous Materials Incident Response Form. Forward the completed form to the Spill Response Coordinator for review (this can be done by placing the form in the "Spill Responses" mailbox).

Training

New employees that are assigned to the response duties will be sent to an initial training that complies with OSHA 1910.120(q) requirements. Maintenance training is scheduled for the third Wednesday of each month for one hour starting at 1PM. Topics will be specific to responses at Duke. Training may be extended longer than one hour, as needed for hands-on training. Each responder is required to document eight hours of training each year. All responders are expected to attend every monthly training class unless other work conflicts are unavoidable.

APPENDIX 6:

OESO CHEMICAL RELEASE RESPONSE POLICY & NOTIFICATION PROTOCOL

APPENDIX 7:

BULK PETROLEUM TANK DRAWINGS AND SPECIFICATIONS

(1)

SUB-BASE TANK MANUFACTURE QUALITY CONTROL FORM

ORDER INFORMATION

Customer: Covington Diesel Job # R1667d6 Order #: I773962
Model #: 1075-G Housing Serial #: 171639 UL Serial #: C600142

Welding

Init. RH/ES Date 12-17-08 -Inner tank manufacture including tank fittings
Init. BB/JJ Date 12-19-08 -Outer tank manufacture including tank fittings
Init. RH/ES Date 12-21-08 -Mate inner tank to outer tank
Init. _____ Date _____ -Outer tank top cover (either closed top diked, or secondary containment)

PRESSURE AND LEAK TESTING

Init. BH/SB/DBA Date 12-22-08 -Pressure test inner tank- Test # 1- 3 Leaks Test # 2- Ø Leaks
Test # 3- Ø Leaks Test # 4- ____ Leaks
Test # 5- ____ Leaks Test # 6- ____ Leaks

Init. DBA Date 12-22-08 Leak check outer tank - Test # 1- 1 Leaks Test # 2- Ø Leaks
(zyglo open top diked)
(zyglo closed top diked) - Test # 3- Ø Leaks Test # 4- ____ Leaks
(pressure test sec. cont.)
Test #5- ____ Leaks Test #6- ____ Leaks

HOLES / ISOLATOR PADS / FINISHING

Init. BH Date 12/22/08 -W-Beam supportive cross members located and welded
Init. _____ Date _____ -Top holes (or top mount isolator pads) positioned and punched
Init. _____ Date _____ -Bottom holes (or bottom mount Is isolator pads) positioned and punched
Init. _____ Date _____ -All holes deburred
Init. _____ Date _____ -All weld BB's removed, all surfaces wire brushed

INTERIOR PROTECTIVE COATING/FINAL WASH

Init. BH/SB Date 12-20-08 -Sta-Brite protective coating applied on all Interior tank surfaces
Init. _____ Date _____ -All exterior surfaces thoroughly cleaned and pressure washed

PRIME AND PAINT

Init. _____ Date _____ -All exterior surfaces primed with 2 part epoxy primer
Init. _____ Date _____ -All exterior surfaces finish painted with enamel paint-COLOR-_____

INSPECTOR SIGN OFF

QUALITY CK BY: JB Kinsey DATE: 01/20/09

FINAL ASSEMBLY QUALITY CONTROL FORM

(1)

ORDER INFORMATION

Customer: Covington Diesel Job #: R166706 Order #: I773962
Model #: 1075-G Housing Serial #: 171639 UL Serial #: U600142

LABELS

___ Robinson Custom Enclosures (2 Labels) ___ "Warning" Label (2 total)
___ Brass "Underwriters Laboratories"Label ___ Part Number, Capacity Label
___ Primary Tank Emergency Vent Label ___ "Annular Space" Emer. Venting label (1 on sec.cont.)
___ "Fitting Identification" labels (1 per fitting except gauge, locate as close to fitting as possible)
___ "Use All Lift Points" Label ___ Small Lift Hook Label
___ Large Lift Hook Label

___ Rochester Gauge (6580-00151) with (0022-1) 2" NPT adapter. CUT TO A LENGTH OF_____INCHES.
___ Krueger Gauge (H-2) with 2" NPT adapter. SHIPPED LOOSE SIZE OF_____INCHES.

NORMAL AND EMERGENCY VENT CAPS-FILL CAP WITH PIPE RISER

_____#2000-1-1/4" NPT atmospheric vent cap (#4023) _____ #2020-2" NPT atmospheric vent cap (#4025)
___ #2030-3" NPT atmospheric vent cap (#4027) _____ #2040-4" NPT atmospheric vent cap (#4028)
___ #2120-2" NPT emergency vent cap (#354-02-2000) _____ #2130-3" NPT emergency vent cap
___ #2140-4" NPT emergency vent cap _____ #2160-6" NPT emergency vent cap
___ #2160-6" NPT emergency vent cap _____ #3000-2" NPT lockable fill cap with 8" pipe riser
___ 8" NPT emergency vent cap

LOW FUEL, HIGH FUEL, & FUEL IN BASIN SWITCHES

JR #1000-Low fuel level switch-standard (M-7000) ACTIVATES AT 25 % FULL 1/8" or 1/2" PIPE CUT TO 25 3/16".
___ #1010-Low fuel level switch-heavy duty (M-5000) ACTIVATES AT____% FULL 1/8" PIPE CUT TO_____".
___ #1020-Low fuel level switch-HD, higher wattage (M-5600-PR) ACTIVATES AT___% FULL 1/4" PIPE CUT TO_____".
JR #1100-High fuel level switch-standard (M-7000) ACTIVATES AT 95 % FULL 1/8" OR 1/2" PIPE CUT TO 1/2".
___ #1110-High fuel level switch-heavy duty (M-5000) ACTIVATES AT_____% FULL 1/8" PIPE CUT TO_____".
___ #1120-High fuel level switch-HD, higher wattage (M-5600-PR)ACTIVATES AT____% FULL 1/4" PIPE CUT TO_____"
___ #1200-Fuel in basin switch-side mtd,standard (M-7700) Shipped loose (Include a 90 degree fem.-fem.pulling ell)
___ #1210-Fuel in basin switch-side mtd, heavy duty (M-5920) Shipped Loose (Include a 90 degree fem.pulling ell)
JR #1220-Fuel in basin switch-top mtd, standard (M-7000) ACTIVATES 1" FROM BOTTOM. 1/8" or 1/2" PIPE CUT TO 33/4".
___ #1230-Fuel in basin switch-top mtd, heavy duty (M-5000) ACTIVATES 1" FROM BOTTOM.1/8" PIPE CUT TO_____"
___ #1240-Fuel in basin switch-top mtd,HD,HW(M-5600-PR) ACTIVATES 1" FROM BOTTOM, 1/4" PIPE CUT TO____"
___ 90 DEGREE MALE TO FEMALE PULLING ELLS_____90 DEGREE FEMALE TO FEMALE PULLING ELLS

ADDITIONAL OPTIONS

90% TT

ASSEMBLER AND INSPECTOR SIGN OFFS

ASSEMBLED BY:_____ DATE:_____
QUALITY CK'D BY: [signature] DATE: 1/30/09

(2)

SUB-BASE TANK MANUFACTURE QUALITY CONTROL FORM

ORDER INFORMATION

Customer: Covington Diesel Job # R116706 Order #: I773962
Model #: 1075-G Housing Serial #: 171640 UL Serial #: C600143

Welding

Init. BH/JP/JM Date 12/22/08 -Inner tank manufacture including tank fittings
Init. KK/WK Date 12/22/08 -Outer tank manufacture including tank fittings
Init. DBA/RH Date 12/23/08 -Mate inner tank to outer tank
Init.____ Date____ -Outer tank top cover (either closed top diked, or secondary containment)

PRESSURE AND LEAK TESTING

Init. BH Date 12-23-08 -Pressure test inner tank- Test # 1- 6 Leaks Test # 2- 8 Leaks
Test # 3-____Leaks Test # 4-____Leaks
Test # 5-____Leaks Test # 6-____Leaks

Init. DBA Date 12-23-08 -Leak check outer tank - Test # 1- 7 Leaks Test # 2- 20 Leaks
(zyglo open top diked)
(zyglo closed top diked) - Test # 3-____Leaks Test # 4-____Leaks
(pressure test sec. cont.)
Test #5-____Leaks Test #6-____Leaks

HOLES / ISOLATOR PADS / FINISHING

Init. RH Date 12-23-08 W-Beam supportive cross members located and welded
Init.____ Date____ -Top holes (or top mount isolator pads) positioned and punched
Init.____ Date____ -Bottom holes (or bottom mount Is Isolator pads) positioned and punched
Init.____ Date____ -All holes deburred
Init.____ Date____ -All weld BB's removed, all surfaces wire brushed

INTERIOR PROTECTIVE COATING/FINAL WASH

Init. KK/WK Date 12-23-08 Sta-Brite protective coating applied on all interior tank surfaces
Init.____ Date____ -All exterior surfaces thoroughly cleaned and pressure washed

PRIME AND PAINT

Init.____ Date____ -All exterior surfaces primed with 2 part epoxy primer
Init.____ Date____ -All exterior surfaces finish painted with enamel paint-COLOR-____

INSPECTOR SIGN OFF

QUALITY CK BY: JB Kruse DATE: 01/20/09

(2)

FINAL ASSEMBLY QUALITY CONTROL FORM

ORDER INFORMATION

Customer: Covington Diesel Job #: R166706 Order #: I773962
Model #: 1075-G Housing Serial #: 171640 UL Serial #: C600143

LABELS

___ Robinson Custom Enclosures (2 Labels) ___ "Warning" Label (2 total)
___ Brass "Underwriters Laboratories"Label ___ Part Number, Capacity Label
___ Primary Tank Emergency Vent Label ___ "Annular Space" Emer. Venting label (1 on sec.cont.)
___ "Fitting Identification" labels (1 per fitting except gauge, locate as close to fitting as possible)
___ "Use All Lift Points" Label ___ Small Lift Hook Label
___ Large Lift Hook Label

___ Rochester Gauge (6580-00151) with (0022-1) 2" NPT adapter. CUT TO A LENGTH OF_____INCHES.
___ Kreuger Gauge (H-2) with 2" NPT adapter. SHIPPED LOOSE SIZE OF_____INCHES.

NORMAL AND EMERGENCY VENT CAPS-FILL CAP WITH PIPE RISER

___ #2000-1-1/4" NPT atmospheric vent cap (#4023) _____ #2020-2" NPT atmospheric vent cap (#4025)
___ #2030-3" NPT atmospheric vent cap (#4027) _____ #2040-4" NPT atmospheric vent cap (#4028)
___ #2120-2" NPT emergency vent cap (#364-02-2000) _____ #2130-3" NPT emergency vent cap
___ #2140-4" NPT emergency vent cap _____ #2150-5" NPT emergency vent cap
___ #2160-6" NPT emergency vent cap _____ #3000-2" NPT lockable fill cap with 8" pipe riser
___ 8" NPT emergency vent cap

LOW FUEL, HIGH FUEL, & FUEL IN BASIN SWITCHES

OK #1000-Low fuel level switch-standard (M-7000) ACTIVATES AT 25 % FULL 1/8" or 1/2" PIPE CUT TO 25 3/16".
___ #1010-Low fuel level switch-heavy duty (M-5000) ACTIVATES AT_____% FULL 1/8" PIPE CUT TO_____".
___ #1020-Low fuel level switch-HD, higher wattage (M-5600-PR) ACTIVATES AT___% FULL 1/4" PIPE CUT TO____".
OK #1100-High fuel level switch-standard (M-7000) ACTIVATES AT 95 % FULL 1/8" OR 1/2" PIPE CUT TO ½".
___ #1110-High fuel level switch-heavy duty (M-5000) ACTIVATES AT_____% FULL 1/8" PIPE CUT TO_____".
___ #1120-High fuel level switch-HD, higher wattage (M-5600-PR)ACTIVATES AT___% FULL 1/4" PIPE CUT TO____"
___ #1200-Fuel in basin switch-side mtd,standard (M-7700) Shipped loose (include a 90 degree fem.-fem.pulling ell)
___ #1210-Fuel in basin switch-side mtd, heavy duty (M-5920) Shipped Loose (include a 90 degree fem.pulling ell)
OK #1220-Fuel in basin switch-top mtd, standard (M-7000) ACTIVATES 1" FROM BOTTOM. 1/8" or 1/2" PIPE CUT TO 33 1/4".
___ #1230-Fuel in basin switch-top mtd, heavy duty (M-5000) ACTIVATES 1" FROM BOTTOM.1/8" PIPE CUT TO____"
___ #1240-Fuel in basin switch-top mtd,HD,HW(M-5600-PR) ACTIVATES 1" FROM BOTTOM. 1/4" PIPE CUT TO____"
___ 90 DEGREE MALE TO FEMALE PULLING ELLS _____90 DEGREE FEMALE TO FEMALE PULLING ELLS

ADDITIONAL OPTIONS

90° @ 1"

ASSEMBLER AND INSPECTOR SIGN OFFS

ASSEMBLED BY:_____ DATE:_____
QUALITY CK'D BY: [signature] DATE: 1/27/09

(3)

SUB-BASE TANK MANUFACTURE QUALITY CONTROL FORM

ORDER INFORMATION

Customer: Covington Diesel Job # R166706 Order #: I773962
Model #: 1075-DW Housing Serial #: 171681 UL Serial #: CL00144

Welding

Init. BH/SP Date 1/16/09 -Inner tank manufacture including tank fittings
Init. DA/RH Date 1/21/09 -Outer tank manufacture including tank fittings
Init. BH/SP Date 1/26/09 -Mate inner tank to outer tank
Init.____ Date____ -Outer tank top cover (either closed top diked, or secondary containment)

PRESSURE AND LEAK TESTING

Init. B H Date 1/23/09 -Pressure test inner tank- Test # 1- 6 Leaks Test # 2- 0 Leaks
Test # 3-____Leaks Test # 4-____Leaks
Test # 5-____Leaks Test # 6-____Leaks

Init. B H Date 1/26/09 Leak check outer tank - Test # 1- 3 Leaks Test # 2- 0 Leaks
(zyglo open top diked)
(zyglo closed top diked) - Test # 3-____Leaks Test # 4-____Leaks
(pressure test sec. cont.)
Test #5-____ Leaks Test #6-____Leaks

HOLES / ISOLATOR PADS / FINISHING

Init. BH Date 1/26/09 -W-Beam supportive cross members located and welded
Init.____ Date____ -Top holes (or top mount isolator pads) positioned and punched
Init.____ Date____ -Bottom holes (or bottom mount is Isolator pads) positioned and punched
Init.____ Date____ -All holes deburred
Init. BH Date 1/26/09 -All weld BB's removed, all surfaces wire brushed

INTERIOR PROTECTIVE COATING/FINAL WASH

Init. SL Date 1/23/09 -Sta-Brite protective coating applied on all interior tank surfaces
Init.____ Date____ -All exterior surfaces thoroughly cleaned and pressure washed

PRIME AND PAINT

Init.____ Date____ -All exterior surfaces primed with 2 part epoxy primer
Init.____ Date____ -All exterior surfaces finish painted with enamel paint-COLOR-____

INSPECTOR SIGN OFF

QUALITY CK BY: David Schuler DATE: 1/23/09

(3)

FINAL ASSEMBLY QUALITY CONTROL FORM

ORDER INFORMATION

Customer: Covington Diesel Job #: R166706 Order #: I773962
Model #: 1075-6 Housing Serial #: 171681 UL Serial #: CL00144

LABELS

___ Robinson Custom Enclosures (2 Labels) ___ "Warning" Label (2 total)
___ Brass "Underwriters Laboratories"Label ___ Part Number, Capacity Label
___ Primary Tank Emergency Vent Label ___ "Annular Space" Emer. Venting label (1 on sec.cont.)
___ "Fitting Identification" labels (1 per fitting except gauge, locate as close to fitting as possible)
___ "Use All Lift Points" Label ___ Small Lift Hook Label
___ Large Lift Hook Label

___ Rochester Gauge (6580-00151) with (0022-1) 2" NPT adapter. CUT TO A LENGTH OF_____INCHES.
___ Krauger Gauge (H-2) with 2" NPT adapter. SHIPPED LOOSE SIZE OF_____INCHES.

NORMAL AND EMERGENCY VENT CAPS-FILL CAP WITH PIPE RISER

___ #2000-1-1/4" NPT atmospheric vent cap (#4023) _____ #2020-2" NPT atmospheric vent cap (#4025)
___ #2030-3" NPT atmospheric vent cap (#4027) _____ #2040-4" NPT atmospheric vent cap (#4028)
___ #2120-2" NPT emergency vent cap (#354-02-2000) _____ #2130-3" NPT emergency vent cap
___ #2140-4" NPT emergency vent cap _____ #2150-5" NPT emergency vent cap
___ #2160-6" NPT emergency vent cap _____ #3000-2" NPT lockable fill cap with 8" pipe riser
___ 8" NPT emergency vent cap

LOW FUEL, HIGH FUEL, & FUEL IN BASIN SWITCHES

DA #1000-Low fuel level switch-standard (M-7000) ACTIVATES AT 25 % FULL 1/8" or 1/2" PIPE CUT TO 25 3/4"
___ #1010-Low fuel level switch-heavy duty (M-5000) ACTIVATES AT_____% FULL 1/8" PIPE CUT TO_____".
___ #1020-Low fuel level switch-HD, higher wattage (M-5600-PR) ACTIVATES AT___% FULL 1/4" PIPE CUT TO____".
DA #1100-High fuel level switch-standard (M-7000) ACTIVATES AT 96 % FULL 1/8" OR 1/2" PIPE CUT TO 1/2".
___ #1110-High fuel level switch-heavy duty (M-5000) ACTIVATES AT_____% FULL 1/8" PIPE CUT TO_____".
___ #1120-High fuel level switch-HD, higher wattage (M-5600-PR)ACTIVATES AT____% FULL 1/4" PIPE CUT TO____"
___ #1200-Fuel in basin switch-side mtd,standard (M-7700) Shipped loose (include a 90 degree fem.-fem.pulling ell)
___ #1210-Fuel in basin switch-side mtd, heavy duty (M-5920) Shipped Loose (include a 90 degree fem.pulling ell)
DA #1220-Fuel in basin switch-top mtd, standard (M-7000) ACTIVATES 1" FROM BOTTOM. 1/8" or 1/2" PIPE CUT TO 33 1/4"
___ #1230-Fuel in basin switch-top mtd, heavy duty (M-5000) ACTIVATES 1" FROM BOTTOM.1/8" PIPE CUT TO____"
___ #1240-Fuel in basin switch-top mtd,HD,HW(M-5600-PR) ACTIVATES 1" FROM BOTTOM. 1/4" PIPE CUT TO____"
___ 90 DEGREE MALE TO FEMALE PULLING ELLS _____90 DEGREE FEMALE TO FEMALE PULLING ELLS

ADDITIONAL OPTIONS

90 % @ 1"

ASSEMBLER AND INSPECTOR SIGN OFFS

ASSEMBLED BY:_____ DATE:_____
QUALITY CK'D BY: Paul Hamm DATE: 8/3/09

(4)

FINAL ASSEMBLY QUALITY CONTROL FORM

ORDER INFORMATION

Customer: Covington Diesel Job #: R166706 Order #: I773962
Model #: 1675-G Housing Serial #: 171682 UL Serial #: CL00145V

LABELS

___ Robinson Custom Enclosures (2 Labels) ___ "Warning" Label (2 total)
___ Brass "Underwriters Laboratories"LabeL ___ Part Number, Capacity Label
___ Primary Tank Emergency Vent Label ___ "Annular Space" Emer. Venting label (1 on sec.cont.)
___ "Fitting Identification" labels (1 per fitting except gauge, locate as close to fitting as possible)
___ "Use All Lift Points" Label ___ Small Lift Hook Label
___ Large Lift Hook Label

___ Rochester Gauge (6580-00151) with (0022-1) 2" NPT adapter. CUT TO A LENGTH OF_____INCHES.
___ Kreuger Gauge (H-2) with 2" NPT adapter. SHIPPED LOOSE SIZE OF_____INCHES.

NORMAL AND EMERGENCY VENT CAPS-FILL CAP WITH PIPE RISER

___ #2000-1-1/4" NPT atmospheric vent cap (#4023) _____ #2020-2" NPT atmospheric vent cap (#4025)
___ #2030-3" NPT atmospheric vent cap (#4027) _____ #2040-4" NPT atmospheric vent cap (#4028)
___ #2120-2" NPT emergency vent cap (#354-02-2000) _____ #2130-3" NPT emergency vent cap
___ #2140-4" NPT emergency vent cap _____ #2150-5" NPT emergency vent cap
___ #2160-6" NPT emergency vent cap _____ #3000-2" NPT lockable fill cap with 8" pipe riser
___ 8" NPT emergency vent cap

LOW FUEL, HIGH FUEL, & FUEL IN BASIN SWITCHES

(2) #1000-Low fuel level switch-standard (M-7000) ACTIVATES AT 25 % FULL 1/8" or (1/2") PIPE CUT TO 25 3/16".
___ #1010-Low fuel level switch-heavy duty (M-5000) ACTIVATES AT_____% FULL 1/8" PIPE CUT TO_____".
___ #1020-Low fuel level switch-HD, higher wattage (M-5600-PR) ACTIVATES AT___% FULL 1/4" PIPE CUT TO_____".
(2) #1100-High fuel level switch-standard (M-7000) ACTIVATES AT 95 % FULL (1/8") OR 1/2" PIPE CUT TO 1/2".
___ #1110-High fuel level switch-heavy duty (M-5000) ACTIVATES AT_____% FULL 1/8" PIPE CUT TO_____".
___ #1120-High fuel level switch-HD, higher wattage (M-5600-PR)ACTIVATES AT___% FULL 1/4" PIPE CUT TO_____"
___ #1200-Fuel in basin switch-side mtd,standard (M-7700) Shipped loose (include a 90 degree fem.-fem.pulling ell)
___ #1210-Fuel in basin switch-side mtd, heavy duty (M-5920) Shipped Loose (include a 90 degree fem.pulling ell)
(2) #1220-Fuel in basin switch-top mtd, standard (M-7000) ACTIVATES 1" FROM BOTTOM. 1/8" or (1/2") PIPE CUT TO 35 1/2".
___ #1230-Fuel in basin switch-top mtd, heavy duty (M-5000) ACTIVATES 1" FROM BOTTOM.1/8" PIPE CUT TO_____"
___ #1240-Fuel in basin switch-top mtd,HD,HW(M-5600-PR) ACTIVATES 1" FROM BOTTOM. 1/4" PIPE CUT TO___"
___ 90 DEGREE MALE TO FEMALE PULLING ELLS _____90 DEGREE FEMALE TO FEMALE PULLING ELLS

ADDITIONAL OPTIONS

90% 1"

ASSEMBLER AND INSPECTOR SIGN OFFS

ASSEMBLED BY:_____ DATE:_____
QUALITY CK'D BY: Paul Hennyd DATE: 12/10/09

(4)

SUB-BASE TANK MANUFACTURE QUALITY CONTROL FORM

ORDER INFORMATION

Customer: Covington Diesel Job #R16670 Order # T77396 2
Model #: 1075-G Housing Serial #: 17682 UL Serial #: 2L00145

Welding

Init. BH/JP Date 1-27-09 -Inner tank manufacture including tank fittings
Init. BH/JP/KK Date 1-28-09 -Outer tank manufacture including tank fittings
Init. KK/JR Date 1-28/09 -Mate inner tank to outer tank
Init.____ Date____ -Outer tank top cover (either closed top diked, or secondary containment)

PRESSURE AND LEAK TESTING

Init. DBA Date 1-27-09 -Pressure test inner tank- Test # 1- 1 Leaks Test # 2- Ø Leaks
Test # 3-____Leaks Test # 4-____Leaks
Test # 5-____Leaks Test # 6-____Leaks

Init. DS Date 1-28/09 Leak check outer tank - Test # 1- 2 Leaks Test # 2- Ø Leaks
(zyglo open top diked)
(zyglo closed top diked) - Test # 3- Ø Leaks Test # 4-____Leaks
(pressure test sec. cont.)
Test #5-____ Leaks Test #6-____Leaks

HOLES / ISOLATOR PADS / FINISHING

Init. KK/JR Date 1-28-09 -W-Beam supportive cross members located and welded
Init.____ Date____ -Top holes (or top mount isolator pads) positioned and punched
Init.____ Date____ -Bottom holes (or bottom mount is isolator pads) positioned and punched
Init.____ Date____ -All holes deburred
Init.____ Date____ -All weld BB's removed, all surfaces wire brushed

INTERIOR PROTECTIVE COATING/FINAL WASH

Init. KK/JR Date 1-28-09 -Sta-Brite protective coating applied on all interior tank surfaces
Init.____ Date____ -All exterior surfaces thoroughly cleaned and pressure washed

PRIME AND PAINT

Init. WLF Date 1-29-09 -All exterior surfaces primed with 2 part epoxy primer
Init. WLF Date 1-29-09 -All exterior surfaces finish painted with enamel paint-COLOR-____

INSPECTOR SIGN OFF

QUALITY CK BY: David Shuler DATE: 1-29-09

File MH26813 . Vol. 1 Sec. 7 and Report Page 1 . Issued: 2008-06-16

DESCRIPTION

PRODUCT COVERED:

USL, CNL - Closed top diked generator base tanks (contained tank assemblies) and secondary containment generator base tanks.

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

CNL indicates investigation to Canadian Standard CAN/ULC-S601-07, Standard for Shop Fabricated Steel Aboveground Tanks for Flammable and Combustible Liquids, Fourth Edition dated December 2007.

USL indicates investigation to US Standard UL142, Standard for Steel Aboveground Tanks for Flammable and Combustible Liquids, Ninth Edition dated December 28, 2006.

GENERAL:

These generator base steel tanks are designed for storage of diesel fuel at atmospheric pressure. These tanks are designed for the support of diesel generator, motors, and/or pumps.

For USL products, the tanks are intended for stationary installation in accordance with the Standard for Flammable and Combustible Liquids Code of the National Fire Protection Association, NFPA No. 30; The Standard for Installation and Use of Stationary Combustion Engine and Gas Turbines, NFPA 37; and The Standard for Emergency and Standby Power Systems, NFPA 110.

For CNL products, the tanks are intended for stationary installation and use in accordance with the National Fire Code of Canada, Part 4, the regulations of the appropriate authority having jurisdiction, the Installation Code for Oil Burning Equipment, CSA B139, and the CCME Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products.

Open and closed top diked tanks are referred to as integral contained tanks in the Canadian Standard.

The tanks are fabricated, inspected, and tested for leakage before shipment from the factory as completely assembled vessels.

REQUIREMENTS:

USL TANKS

The construction of the tanks and dikes shall be in accordance with the current edition of the Standard of Underwriters Laboratories Inc. for Steel Aboveground Tanks for Flammable and Combustible Liquids, UL 142, and as described in the Description in this Report. Details not specifically covered in the descriptive section of this Follow-Up Service Procedure shall conform with this Standard.

CNL TANKS

See Section General for additional construction details.

TEST TO BE CONDUCTED BY MANUFACTURER:

USL TANKS

SECONDARY CONTAINMENT TANKS

1. Each tank, before painting, shall be tested by the manufacturer and provided tight against leakage in accordance with the following test procedure.

A. The primary tank shall be pressurized to 3 to 5 psig and held for a period of 1 hour to check for leakage. A continuous drop in pressure is considered evidence of leakage. While maintaining 3 psig pressure on the primary tank, the space bounded by the primary and secondary walls shall be pressurized to 3 to 5 psig. The entire outer surface shall be checked for leakage by applying soap suds, linseed oil or equivalent solution. Continuous formation of bubbles is evidence of leakage.

2. If leaks are noted during testing, the tank shall be made tight by welding and retested. Defects in welds shall be repaired by chipping or melting out from one or both sides of the joint, as required, and rewelding.

CLOSED TOP DIKED GENERATOR BASE TANKS

1. Each tank, before painting, shall be tested by the manufacturer and provided tight against leakage in accordance with the following test procedure.

A. After completion of the primary tank, it shall be checked for leakage by applying internal air pressure and using soap suds, linseed oil or equivalent material for detection of leaks. The test pressure shall be 3 to 5 psig. Alternately, the pressure may be applied to the primary tank for a period of at least one hour while the pressure gauge is observed. A continuous loss of pressure is indication of leakage.

B. The rupture basin (dike) shall be checked for leaks by filling it with water, using a dye penetrant on all welds, or by other suitable means. Alternately, prior to cutting the emergency vent opening, the rupture basin may be checked for leakage by applying internal air pressure to the primary tank manifolded to the dike and using soap suds, linseed oil or equivalent material for detection of leaks. The test pressure shall be 3 to 5 psig.

2. If leaks are noted during testing, the tank shall be made tight by welding and retested. Defects in welds shall be repaired as detailed in the Standard, by chipping or melting out from one or both sides of the joint, as required, and rewelding.

CNL TANKS

See Section General for production test details for CNL tanks.

MARKING:

USL TANKS

Method of marking shall be in accordance with the current Edition of the Standard, UL142. A corrosion resistant metal nameplate or a UL Component Recognized pressure sensitive marking and labeling system label (PGDQ2) suitable for use when exposed outdoors and to occasional exposure to fuel oil when affixed to the appropriate substrate is applied to the outside surface of the tank after finishing. All tanks shall be marked with the following:

1. The manufacturer's name.

2. The tank capacity.

3. The following statements:

   A. "For Diesel Fuel Only."

   B. "Maximum Load Capacity - 6212 lb. Per Mounting Beam" or equivalent.

   C. "This Tank Is Intended For Stationary Installation Only."

   D. "This Tank Requires Emergency Relief Venting. Capacity Not Less Than (+) CFH based on installation within one foot of tank top".

      (+) - See Table 8.1 of UL 142.

   E. "The Annular Space Requires Emergency Relief Venting. Capacity Not Less Than (+) Cubic Feet Per Hour" (Secondary Containment Tanks only).

      (+) - See Table 8.1 of UL 142.

   G. "Pressurize Primary Tank When Pressure Testing Annular Space" (Secondary Containment Tanks only). 21 kPA

   H. "Maximum Lift Lug Load - 20140 lb Per Lift Fitting", or equivalent.

   I. The capacity of the diked area in US gallons or in % containment of the primary tanks (diked tanks only)

   J. "Closed Top Diked" shall be marked adjacent to the Listing Mark (diked tanks only)

4. The emergency vent openings shall be identified.

CNL TANKS

See Section General for additional markings required for tanks bearing the cUL Listing Mark.

LISTING MARK:

CLOSED TOP DIKED GENERATOR BASE TANKS:

(Label Account 58-24-6)

THE CANADIAN AND/OR US SYMBOL OF UNDERWRITERS LABORATORIES INC. (as applicable for the tank construction)

LISTED
CLOSED TOP DIKED GENERATOR BASE TANK
SERIAL NUMBER

SECONDARY CONTAINMENT GENERATOR BASE TANKS:

(Label Account 58-24-2)

THE CANADIAN AND/OR US SYMBOL OF UNDERWRITERS LABORATORIES INC. (as applicable for the tank construction)

LISTED
SECONDARY CONTAINMENT GENERATOR BASE TANK
SERIAL NUMBER

CONSTRUCTION DETAILS:

General - The closed top diked generator base tanks and secondary containment generator base tanks are identical in construction, except for the emergency venting construction of the rupture basin (secondary containment tank or dike). See ILL. 3, details A and B for venting constructions. The tanks shall be constructed in accordance with the current Edition of UL 142 and/or CAN/ULC-S601 and as described below. The Illustrations show a typical construction.

The primary tank (ILL. 1) and secondary containment tank or dike (ILL. 2) are assembled as shown in ILL. 3. The tanks shall have the following maximum dimensions, measured from the outer most surface. These dimensions may be less than those specified below, provided the components are constructed using the minimum material thickness or structural steel as specified in the drawings. Fitting locations may vary from that shown in the Illustrations. The tanks may be provided with an optional stub up area as shown in the ILLS. The stub up area shall not be larger than 41 x 41 in.

Primary Tank:	Length - Unlimited * Width - 144 in. Height - 54.5 in. Top Stiffener Span - 36 in. (Maximum) Bottom Spacer Span - 36 in. (Maximum)
Secondary Tank/Dike:	Length - Unlimited * Width - 144 in.** Height - 56 in. Lifting Lug/Gusset Span - 120 in. (Maximum)

* Primary tank capacity for CNL tanks is limited to 100,000 Liters.

** Measured from inner surface of each side rail. Maximum width, including flange, may be 168 in., as shown in ILL. 3 Side rail flange width may vary, but shall not exceed 12 in. and shall not be less than 2 in.

Provisions for Venting - Each primary tank shall have provision for normal and emergency venting. Each rupture basin shall have provision for emergency venting. Vent openings shall be sized in accordance with UL 142 and/or CAN/ULC-S601. The vent openings shall be identified and shall be in addition to filling, withdrawal and monitoring openings. The wetted surface includes 100 percent of the area of the four sides and the bottom of the rectangular tank/dike. The surface area of the top may be omitted.

The rupture basin on diked (contained) tanks shall have provision for emergency venting, such that the opening can not be plugged or capped. The opening shall be sized such that the area of the opening is at least as much as the area of the required emergency vent pipe size specified in Table 8.1 of UL 142.

Additional Openings - Openings in the primary tank, in addition to the vents, shall be provided in the top of the tank above the normal maximum liquid level for connection of fill piping and monitoring. All openings shall employ fittings constructed in accordance with the Standard. Drain fittings may be provided on the primary tank and dike. Fitting locations may vary from the location shown in the ILLS.

Joints and Seams - Joints and seams shall be in accordance with the Standards and ILL. 3.

Material - shall be as specified in the Standards. Thickness shall be as specified in ILLS. 1, 2 and 3. For CNL tanks, the primary steel wall (inner top, bottom, ends and sides) thickness shall be as specified in the drawings or as specified below, whichever is greater.

Tank Capacity (L)	Min Thickness - Primary Tank (mm/in)
2500 or less	2.5/0.098
2500 - 5000	3.5/0.138
5000 and above	4.5/0.177

The bottom thickness of the outer wall shall be equal to, or greater than, the primary tank bottom thickness and the outer shell thickness shall be a minimum of 2.5 mm (0.098 in), or as specified in the ILLS, whichever is greater.

Lifting Fitting - Located as shown in ILL. 1. A minimum of four lugs are required (two per side). Constructed of 1/2 in. plate with one 2-1/2 in. diameter hole in the center. Welded to side rails on both sides of plate with 3-1/2 long welds (min), except for center welds shall be 6-1/2 in. long (min).

Generator Mounting Beams - W4 x 13 structural I-Beams positioned as shown in ILL. 3. Additional beams may be added.