

Wake Forest University Integrated Contingency Plan for Oil and Chemical Spills

SECTION I – Plan Introduction and Elements

1. PURPOSE AND SCOPE OF PLAN COVERAGE

This Integrated Contingency Plan (ICP) or “One-Plan” is the emergency response plan for responding to releases of oil and non-radiological hazardous substances. The ICP is designed to fulfill requirements of a number of statutes and regulations, administered by several state and federal agencies, requiring emergency response plans. Wake Forest University (WFU) is currently subject to the following federal regulations covered under this plan:

- EPA's Oil Pollution Prevention Regulation (SPCC and Facility Response Plan Requirements) -- 40 CFR part 112.7(d) and 112.20-.21;
- OSHA's Emergency Action Plan Regulation -- 29 CFR 1910.38(a);
- OSHA's HAZWOPER Regulation -- 29 CFR 1910.120; and
- EPA's Resource Conservation and Recovery Act Contingency Planning Requirements -- 40 CFR part 264, Subpart D, 40 CFR part 265, Subpart D, and 40 CFR 279.52.

This Plan covers the following WFU facilities, owned by WFU and located in Winston-Salem, North Carolina:

- Reynolda Campus located at 1834 Wake Forest Road;
- BB&T Field located between Reynolds and Deacon Boulevard, approximately one mile from Reynolda Campus;
- Wake Forest University Nanotechnology Center located at 401 Deacon Boulevard;
- University Corporate Center located at 1100 Reynolds Boulevard;
- Wake Downtown located at 455 Vine Street.

The Associate Director of Environmental, Health and Safety is the primary facility contact for the ICP and the designated person responsible for spill prevention at these locations.

The portions of the ICP covering EPA's Oil Pollution Prevention Regulation SPCC Plan are prepared for oil storage facilities with an aggregate aboveground oil storage capacity exceeding 1,320 gallons. The aggregate capacity applies to aboveground containers with capacities of 55 gallons or greater. WFU's Reynolda Campus has approximately 31,636 gallons of aboveground oil storage capacity. WFU's BB&T field has approximately 3,712 gallons of aboveground oil storage capacity and the University Corporate Center has approximately 3,839 aggregate aboveground oil storage capacity.

OSHA's Emergency Action Plan Regulation is included in this plan since fire extinguishers are required and provided in specific locations at WFU, and evacuation is required during a fire.

EPA's Resource Conservation and Recovery Act Contingency Planning Requirements and portions of OSHA's HAZWOPER Regulation are part of the ICP as WFU stores, handles and uses chemical products in conjunction with the education, research, scientific research, and facilities maintenance and operations, and may generate hazardous waste as a result of these operations. The Hazardous Waste Contingency Plan

is required to respond to fires, explosions, or any unplanned sudden or non-sudden release of chemicals or hazardous waste or their constituents to air, soil or surface water.

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3. CURRENT REVISION DATE

JULY, 2017

4. GENERAL FACILITY IDENTIFICATION INFORMATION

Facility Names Covered Under Plan	Wake Forest University – Reynolda Campus, BB&T Field, University Corporate Center, Center for Nanotechnology & Molecular Materials, Wake Downtown-B60
Owner / Operator and Main Mailing Address	Wake Forest University 1834 Wake Forest Road Winston-Salem, NC 27109
Physical and Mailing Address of Facilities Covered Under Plan (including county and latitude/longitude)	Wake Forest University – Reynolda Campus 1834 Wake Forest Road Winston-Salem, NC 27109, Forsyth County 36.135403, -80.279227
	BB&T Field 499 Deacon Boulevard Winston-Salem, NC 27105, Forsyth County 36.129674, -80.254671
	University Corporate Center 1100 Reynolds Boulevard Winston-Salem, NC 27105, Forsyth County 36.133448, -80.260330
	Center for Nanotechnology & Molecular Materials 401 Deacon Boulevard Winston-Salem, NC 27105, Forsyth County 36.129726, -80.252149
	Wake Downtown-B60 455 Vine Street Winston-Salem, NC 27101, Forsyth County 36.100191, -80.240374
Correspondence and Contact for Plan Development	Stephen W. Fisenne Associate Director – Environmental, Health and Safety 1834 Wake Forest Road Winston-Salem, NC 27109 336-758-3427, fisennsw@wfu.edu
NAICS and DUNS	NAICS 6311310, DUNS 041418799
EPA ID#	WFU – Reynolda Campus NCD986166247 Center for Nanotechnology NCR000144196 Wake Downtown NCR000168864
DOT Hazardous Materials Registration	WFU HM Company ID: 080676 (covers all locations)
Department of Environmental, Health and Safety	336-758-3427
University Police Department	336-758-5911
University Emergency Manager – August Vernon	336-414-4752

4.1 WAKE FOREST UNIVERSITY

Key Contacts	
Hof Milam –Executive Vice President	336-758-7415
Emily Neese – AVP, Strategy and Operations	336-758-3721

4.2 REYNOLDA CAMPUS

Key Contacts	
John Shenette – AVP, Facilities and Campus Services	336-758-4623
Mike Draughn – Director, Maintenance and Utilities Operations	336-758-4001
Mike Thompson – Lab Manager, Chemistry	336-758-5324
Eric Chapman – Manager, Instructional Resources, Physics	336-758-5532
Christie Otten – Core Preparator, Biology	336-607-4193
Jovita Newman – Research Associate, Health and Exercise Science	336-758-3969
David Gainey – Visual Arts Technician, Scales Fine Arts Center	336-758-3788
Trevor Anderson – Technical Director, University Theater	336-758-5296

The Reynolda campus is comprised of over 50 buildings on approximately 320 acres. The campus is composed of primarily wooded and landscaped grassy areas, with some paved parking, road, and walking surfaces. Approximately 33% of the site consists of impervious surfaces. Reynolda Campus is bordered by primarily residential property. The campus is situated on a small hill, and storm water sheet flow is directed to the southwest to unnamed tributaries to Silas Creek. Storm water is also collected from the site via a system of drainage ditches and catch basins, which discharge to the same unnamed tributaries to Silas Creek.

In 2008, WFU conducted a survey to determine where building floor drains discharge. Unless permitted under a NPDES permit, all building floor drains discharge to the sanitary sewer system which is operated by the City of Winston-Salem.

Reynolda Campus operates over 75 teaching and research labs, a half dozen art studios, and several maintenance shops.

4.3 BB&T FIELD

Key Contacts	
Steve Adams – Assistant AD, Internal Operations	336-758-4908
Chris Stilley – Director, Athletics Maintenance	336-758-4509

BB&T Field is located approximately one mile from Reynolda Campus. The approximately 35-acre facility is surrounded by commercial property. BB&T Field contains the football stadium, Deacon Towers, Wake Forest Tennis Center and Wake Forest Baseball Park. The site is composed primarily of paved parking and

walking surfaces, with some grassy areas. Storm water is collected through a catch basin system from the parking areas and roadways and directed to an unnamed creek that flows along the west side of the property. Storm water from the playing field is managed in a sand filtration system under the field.

Building floor drains discharge to the sanitary sewer system which is operated by the City of Winston-Salem.

4.4 UNIVERSITY CORPORATE CENTER

Key Contacts	
Ken Basch – Executive Director, Real Estate	336-758-5584
Dennis Shore – Superintendent	336-758-4255

Wake Forest University owns and operates the University Corporate Center located at 1100 Reynolds Boulevard in Winston-Salem, North Carolina. The site contains an office building (approximately 500,000 square feet), employee parking lots, and associated utilities and outbuildings. Wake Forest University staff uses part of the office building, and the remaining space is leased to AON and Pepsi.

The site drains by overland flow and subsurface piping to an unnamed tributary to Silas Creek.

4.5 CENTER FOR NANOTECHNOLOGY & MOLECULAR MATERIALS

Key Contacts	
David Carroll – Director	336-727-1804
Corey Hewitt – Research Scientist and Facility Manager	336-758-5337

The Nanotechnology Center is an infrastructural resource for members and their guest. There are five resource labs and the Center makes its capabilities available for use to the broader research and development community.

4.6 WAKE DOWNTOWN

Key Contacts	
Rebecca Alexander – Director of Academic Programs	336-702-1926
Brian Smith – Laboratory Manager	336-702-1964

Wake Downtown is part of a former R.J. Reynolds Tobacco Company building. The 115,000 square foot space houses teaching and research in biochemistry and molecular biology, medicinal chemistry and drug discovery, and engineering.

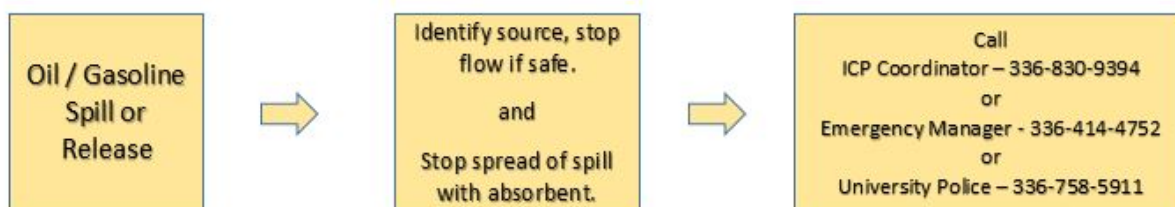
Wake Downtown operates 30 teaching and research laboratories including the NMR lab. The building is attached to the Wake Forest University School of Medicine.

SECTION II - Core Plan Elements

1. DISCOVERY

1.1 OIL LEAK OR SPILL - DISCOVERY

Upon discovery of an oil leak or spill, attempt to identify the source of the leak or spill and stop the flow if it is safe to do so. Use absorbent socks, pads, or vermiculite to stop the spread of released material. Immediately notify either the ICP Coordinator or the Emergency Manager. In the event these two individuals can not be reached, call 336-758-5911 for University Police.



1.1.1 Release from Underground Storage Tank

UST systems on Reynolda Campus and UCC are equipped with electronic high level alarms that trigger audible alarms to prevent tank overfilling. The overfill alarm also has a visual signal. UST # 3 on Reynolda Campus is also equipped with electronic leak detection of its interstitial space. Oil transfers are carefully monitored by WFU staff and the carrier to prevent tank overfilling. There are no UST's at BB&T Field.

1.1.2 Release from Above Ground Storage Tanks

Most ASTs at WFU are equipped with product level gauges to help prevent releases during tank filling. Some ASTs have high level vent whistles that signal the carrier to stop the transfer if an overfill is about to occur. Tank # 5 at Fleet Services does not have a product level gauge, but it is equipped with a vent whistle. The tank level is manually checked prior to each diesel delivery. WFU ensures that all vent whistles and product level gauges are kept in good working order. Because most fill ports are located directly on the tanks, the carrier can see the tank as it is being filled. WFU staff monitor product gauges during delivery to ASTs that have remote fill ports. Most of the double-walled ASTs have access ports to check for leaked oil in the interstitial spaces. Food Services Staff ensure that the waste cooking oil AST has sufficient capacity prior to adding oil to them. Potential releases from ASTs and associated piping can also be detected during informal inspections, formal monthly and annual inspections, and integrity tests (see Annex 3).

1.1.3 Release from Electrical and Operating Equipment

The oil-filled electrical transformers and Coal Yard trash compactor are inspected by WFU monthly. The hydraulic elevators and lift, including the oil storage reservoirs, are inspected quarterly by a vendor. WFU

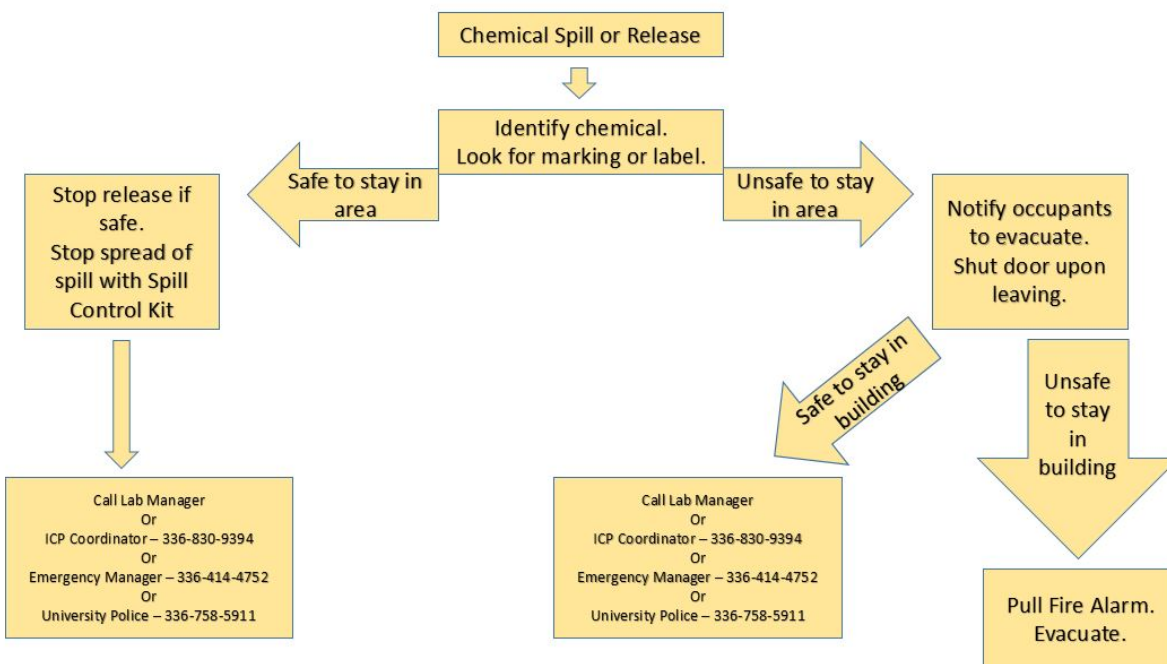
staff working in the vicinity of this equipment would also note and respond to any potential oil releases. Malfunctioning equipment is also likely to alert WFU staff of any oil releases in a fairly short time period.

1.2 CHEMICAL SPILL OR RELEASE - DISCOVERY

In the event of a spill or release of a chemical product or waste, identification of the chemical is essential to proper response. Look for container markings or labels that will assist in determining either the specific chemical or the hazards.

If it is determined it is safe to stay in the area, try to stop the spread of the spill using absorbent spill control materials. Immediately notify either the ICP Coordinator or the Emergency Manager. In the event these two individuals can not be reached, call 336-758-5911 for University Police.

If it is unsafe to stay in the area, notify all occupants to evacuate, shut the door when leaving and call University Police at 336-758-5911. If it is unsafe to stay in the building, pull the fire alarm and evacuate.



Generally, a chemical spill or release in a lab will involve a solid or liquid from a container of 5 gallons or less. This does not make the spill any less of a hazard than larger spills of less hazardous substances due to the highly hazardous nature of many laboratory chemicals. The most common spills come from dropped or leaking containers.

Spills outside of labs will be less common, as WFU does not store reportable quantities of many chemicals and the hazards are minimal to moderate. Preventing spills from reaching floor drains or stormwater drains will be of paramount importance.

1.2.1 Flammable Liquid Spill

Flammable liquids with flash points less than 140F pose a fire hazard when spilled. Open flames in the area should immediately be extinguished and any operations that may cause sparking must be stopped during clean up.

1.2.2 Corrosive Liquid Spill

Corrosive spills can cause damage to living tissue on exposure to skin, and may burn lungs and trachea upon inhalation of vapors. Set fume hoods to Emergency Exhaust to assist in removing vapors.

1.2.3 Toxic Chemical Spill

Toxic chemicals can cause both acute and chronic health issues and in some cases may lead to permanent injury or death. Any spilled substance that is a poison by inhalation hazard requires immediate evacuation of the lab. Only trained personnel from EHS, WSFD, or approved contractor may clean up spills of poison by inhalation.

Other toxins may only be cleaned by individuals trained to do so, and who are wearing appropriate PPE to prevent exposure.

1.2.4 Gas Cylinder Leak

Leaks from compressed gas cylinders can be life threatening by asphyxiation, poisoning, and / or explosion. See the Section 3.3.5.3 on *Emergency Action for Handling Leaking Compressed Gas Cylinders* if you suspect a gas leak.

2. INITIAL RESPONSE

As noted above, on discovery of an oil or chemical spill or release the ICP Coordinator, Emergency Manager, and/or University Police will be notified. The ICP Coordinator or Alternate will gather all relevant information and summon assistance as needed, including key contacts at the University and outside agencies.

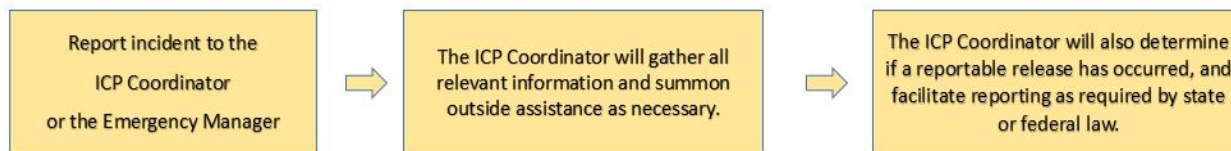
2.1 KEY CONTACTS

Personnel listed below are key contacts when responding to a spill or release at any of the five WFU locations covered under this plan. Twenty-four hour numbers are included, as indicated.

WFU Phone Numbers – all locations	
WFU EH&S Department Phone Number	336-758-3427
WFU University Police	911 or 336-758-5911 (24 hour)
Steve Fisenne, IPC Coordinator	336-830-9394 (24 hour)
Michelle Lennon, Alternate IPC Coordinator	336-480-8480 (24 hour)
August Vernon – Emergency Manager	336-414-4752 (24 hour)
BB&T Field	
Steve Adams – Assistant AD, Internal Operations	336-758-4908
Chris Stilley – Director, Athletics Maintenance	336-758-4509
Nanotechnology Center	
David Carroll – Director	336-727-1804
Corey Hewitt – Research Scientist and Facility Manager	336-758-5337
Wake Downtown	
WFU Security – Sunstates Security	336-713-1568 (24 hours)
Rebecca Alexander – Director of Academic Programs	336-702-1926
Brian Smith – Laboratory Manager	336-702-1964
University Corporate Center	
Ken Basch – Executive Director, Real Estate	336-758-5584
Dennis Shore – Superintendent	336-462-5772 (24 hour)
UCC Security	336-758-7292 (24 hour)
Police	
WFU University Police	336-758-5911 (24 hour)
Winston-Salem Police Department	911 or 336-773-7700 (24 hour)
Forsyth County Sheriff	911 or 336-917-7001 (24 hour)
Fire/Rescue	

Winston-Salem Fire Department	911 or 336-773-7900 (24 hour)
Wake Forest University Baptist Medical Center	336-716-2255 (24 hour)
Environmental Emergencies	
National Response Center/EPA Spill Hotline	800-424-8802 (24 hour)
NC DEQ (Winston-Salem)	336-771-5000 336-771-4630 (fax)
Winston-Salem Sewer Authority	336-765-0130
NC Emergency Management (Raleigh)	800-858-0368 (24 hour)
Forsyth County Emergency Management	336-727-2200 (24 hour)
CHEMTREC	800-424-9300 (24 hour)
Private Spill Response Contractors	
Zebra Environmental	336-841-5276 (24 hour)
Shamrock Environmental	800-881-1098 (24 hour)

2.2 GENERAL SPILL RESPONSE PROCEDURES



2.2.1 Spill Equipment

All visible spills are immediately stopped and cleaned up using spill clean-up materials and spill kits. An inventory of spill clean-up materials available on campus is provided in Section III Annex 3, Chapter 3.6.3. Spill kits are used only by trained personnel who are familiar with the hazards posed by the spilled material and are knowledgeable of how to manage the spill clean-up residue. Any employee who has basic spill response training may respond to small leaks or spills that do not pose significant risks to health or safety. The WFU Environmental, Health and Safety (EHS) Department or the Emergency Manager should be called to handle larger spills. The contents of the spill kits are periodically inspected by the IPC Coordinator or designee to ensure that they are fully stocked and ready for use in the event of a spill. If, during an inspection, items are noted as missing from the spill kit, the missing contents are ordered and replaced within the kit as soon as reasonably possible.

2.2.2 Spill Response

As described above, WFU is equipped with strategically placed spill kits containing absorbent clean up materials that will generally be used to contain and clean up minor spills. Properly trained WFU staff may respond to releases using the spill response procedures outlined below.

For spills that are beyond the control of the WFU EHS Department and the standard clean up/control methods discussed in this chapter, the IPC Coordinator will contact the Fire Department and an emergency clean up contractor, if necessary. Regardless of the amount spilled, if an oil release reaches a stormwater catch basin or a surface water body, the IPC Coordinator will immediately contact the Fire Department. The IPC Coordinator and Alternate are the primary responsible parties at WFU for the coordination of any spill response and clean-up effort. They will draw upon the resources of the EHS Department, as necessary.

The Fire Department will usually be the first agency to respond to a release and is typically responsible for contacting other state or regional emergency response agencies in the event they are needed. After the initial response, the Fire Department may choose to turn over responsibility for the release clean up to WFU's private clean up contractor. The private clean up contractor has sufficient equipment and materials to handle any potential release at WFU, including absorbent materials, containers, earth moving equipment, and vacuum trucks. It is estimated that the largest potential release from a WFU oil storage facility at any location would be 15,000 gallons, which is the capacity of the largest AST. It is estimated the largest chemical release would be 55 gallons, which is the capacity of the largest container holding chemical product or waste.

In the event that the private spill contractor is unable to handle the release response, County and/or State emergency response agencies will be summoned. WFU has emergency mutual aid agreements in place with the Fire Department, Police Department, and a private spill contractor, as identified in the Section III Annex 3.

2.2.3 General Spill Response Procedures

A spill could occur at WFU due to accidents during oil or chemical handling activities or tank/container/bottle/containment failure. In the event of a minor release, it is WFU's policy to place absorbent booms and/or drain covers/mats on all floor drains, catch basins, and any other drainage pathway to prevent dispersion and to limit the flow to the extent possible. The general spill response procedures outlined below should be followed for all spills that will be managed by WFU personnel. Response to chemical and oil spills from specific sources are addressed in the Section III, Annex 3.

If the clean up will be conducted by WFU personnel, the following general procedures should be followed:

1. Eliminate ignition sources that may be present.
2. Avoid contact with spilled product.
3. Don appropriate PPE.
4. Stop the source of the release if it is safe to do so.
5. Contain the released oil or chemical with absorbent materials.
6. Prevent released material from entering sewers, water bodies, drains, and confined spaces.
7. Restrict access to impacted and potentially threatened areas.
8. If outside, keep unprotected personnel upwind of spill area. If inside, keep all personnel out of the room except those involved in spill clean up.
9. If spill occurs on an unpaved area, remove and dispose of all contaminated soil in accordance with applicable rules.
10. Choose clean-up equipment, that will not react with, be corroded or otherwise damaged by the spilled product. Use explosion-proof and spark-proof equipment, where necessary.
11. Ensure recovered spill material is collected, containerized, labeled, properly characterized, and disposed of in accordance with all applicable requirements.

3. SUSTAINED ACTIONS

It is expected that most incidents will be handled by a few individuals without implementing an extensive response management system. Any incident requiring prolonged mitigation and recovery will involve outside contractors and/or consultants to assist in design and implementation of an effective remediation system. Such an incident would more than likely involve the University Crisis Management Team, whose role is to provide support through management of crisis level issues, manage risks, exposures and stakeholder interest in response to an event or disaster. Development of a remedial program will involve several departments and senior management at the University. Departments most likely to be involved, and the role they will play in any sustained remedial action, are listed here:

Department	Role
Environmental, Health and Safety	Oversight of remedial project.
Financial Services	Budget, funding, vendor approval, bidding.
Facilities and Campus Services	Maintenance and utilities, project management, logistics.
Communications and External Relations	Public relations.
Insurance and Risk Management	Identifying and managing risks, insurance claims.
Crisis Management Team	Oversight of distribution of resources and continuity of business.

4. TERMINATION AND FOLLOW-UP ACTIONS

This section will address the procedures to ensure that the person in charge of mitigating the incident can, in coordination with the federal or state OSC as necessary, terminate the response. It also addresses follow-up actions associated with termination of a response (e.g., accident investigation, response critique, plan review, written follow-up reports).

4.1 TERMINATION OF RESPONSE

Termination of response will differ depending on the need for outside agencies to assist with the response.

For spills that do not require assistance of outside agencies, termination of response will occur when the ICP Coordinator or designee confirm:

1. Risk of potential exposure has been eliminated.
2. The source of the spill or release has been remedied to the point where no further release will occur.
3. Spilled or released material has been cleaned to appropriate standard, and at a minimum that no further impact will occur.
4. All appropriate agencies have been notified, as required.
5. Repairs have been made or scheduled to repair damaged or faulty equipment.
6. Recovered spill material is collected, containerized, labeled, properly characterized, and scheduled for disposal of in accordance with all applicable requirements
7. Re-usable equipment has been fully decontaminated.
8. Spill materials have been re-ordered, as necessary, to replace equipment used in the spill.

Termination of response when outside agencies are involved in the response will usually be managed through the Fire Department. In such a situation it is likely the CMT will have been activated and will work within the unified command structure of the Incident Command System (ICS) to make the decision to terminate the response. Depending on the severity of the incident, the full CMT may be activated, in which case the University Crisis Management Plan will be followed.

4.2 FOLLOW-UP ACTIONS

Following a spill or release of either petroleum product or other chemical the Spill Report Form will be completed by the ICP Coordinator or designee. Once completed the Form will be maintained within the EHS records room or digitally for further access and review.

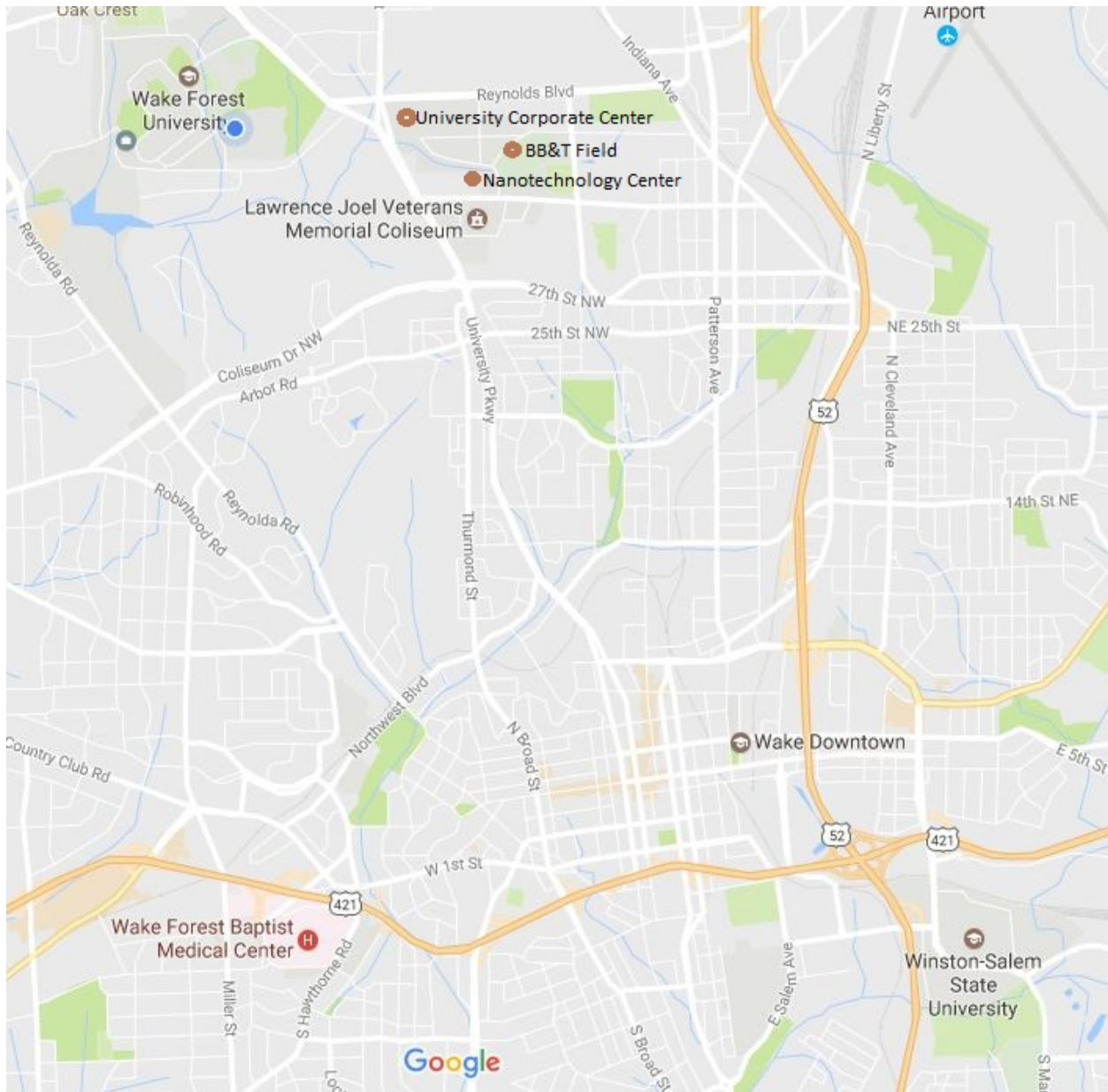
As part of the follow-up, an accident/incident investigation will occur to identify the root cause of the spill or release in an attempt to prevent a repeat of the situation. The investigation will be headed by the ICP Coordinator or designee. Findings from the investigation will be shared with those involved in the incident as well as members of the University that would benefit from the findings. Investigative findings may indicate the need for administrative and/or engineering changes to prevent a reoccurrence. In this case, the responsible individuals will be made aware of the findings and initiate appropriate changes, as necessary. Training or re-training of personnel may also be required, which would occur as soon as possible.

SECTION III - Annexes

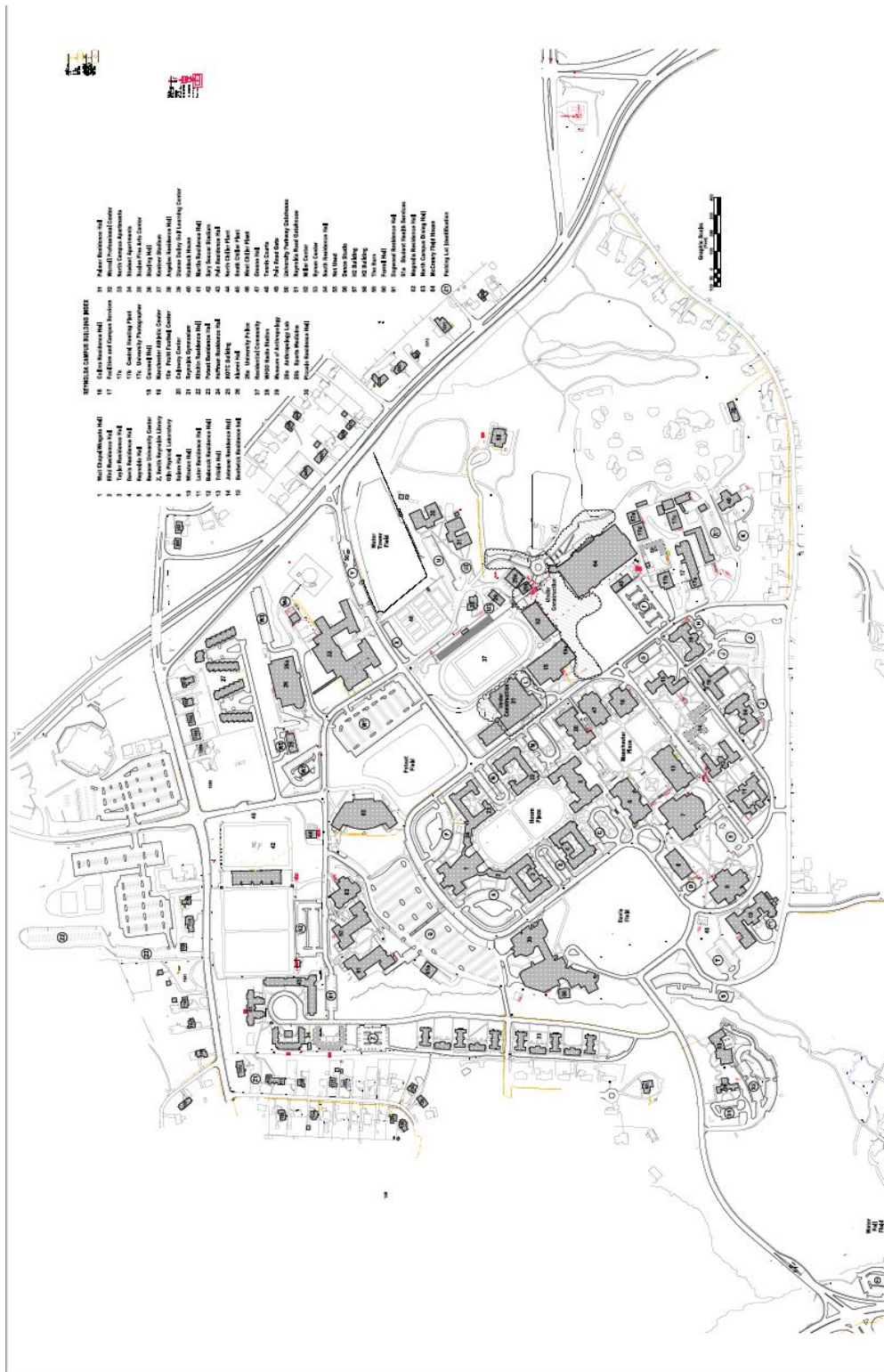
1. ANNEX 1 – FACILITY AND LOCALITY INFORMATION

1.1 FACILITY MAPS

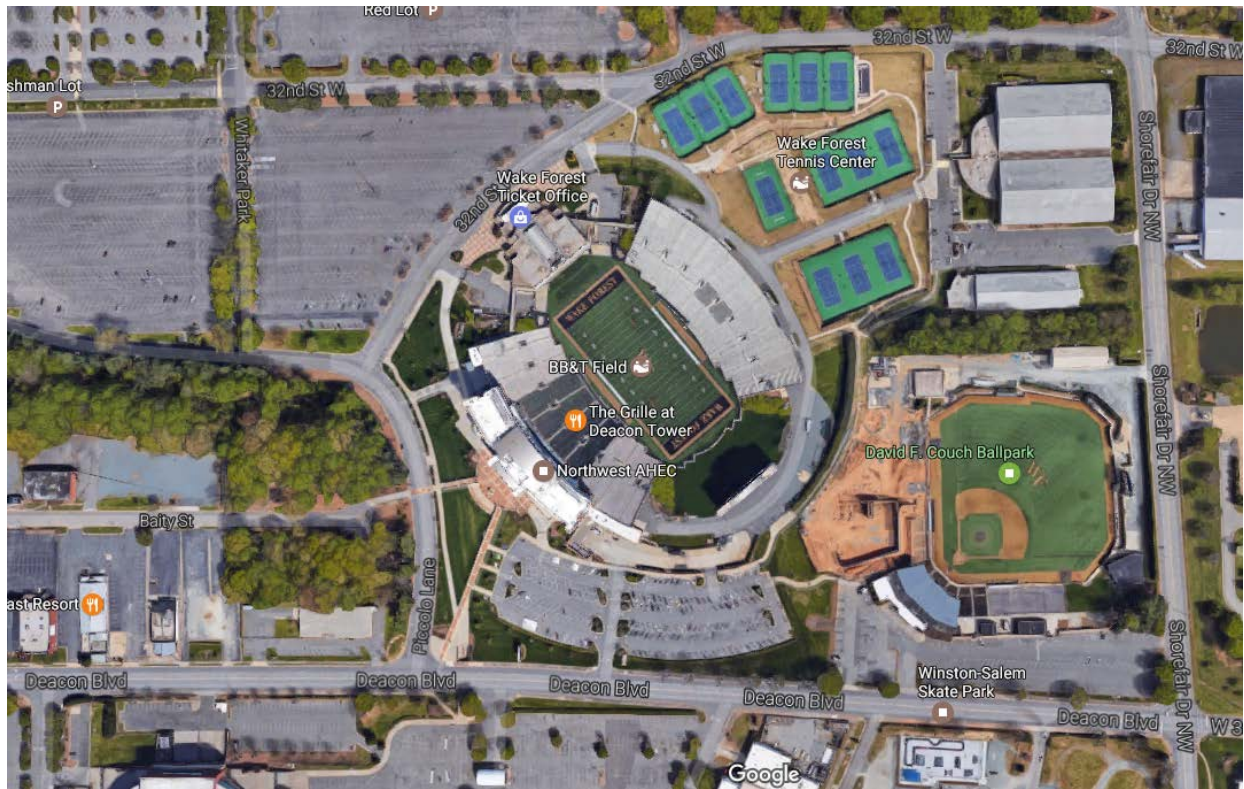
1.1.1 Winston-Salem, NC



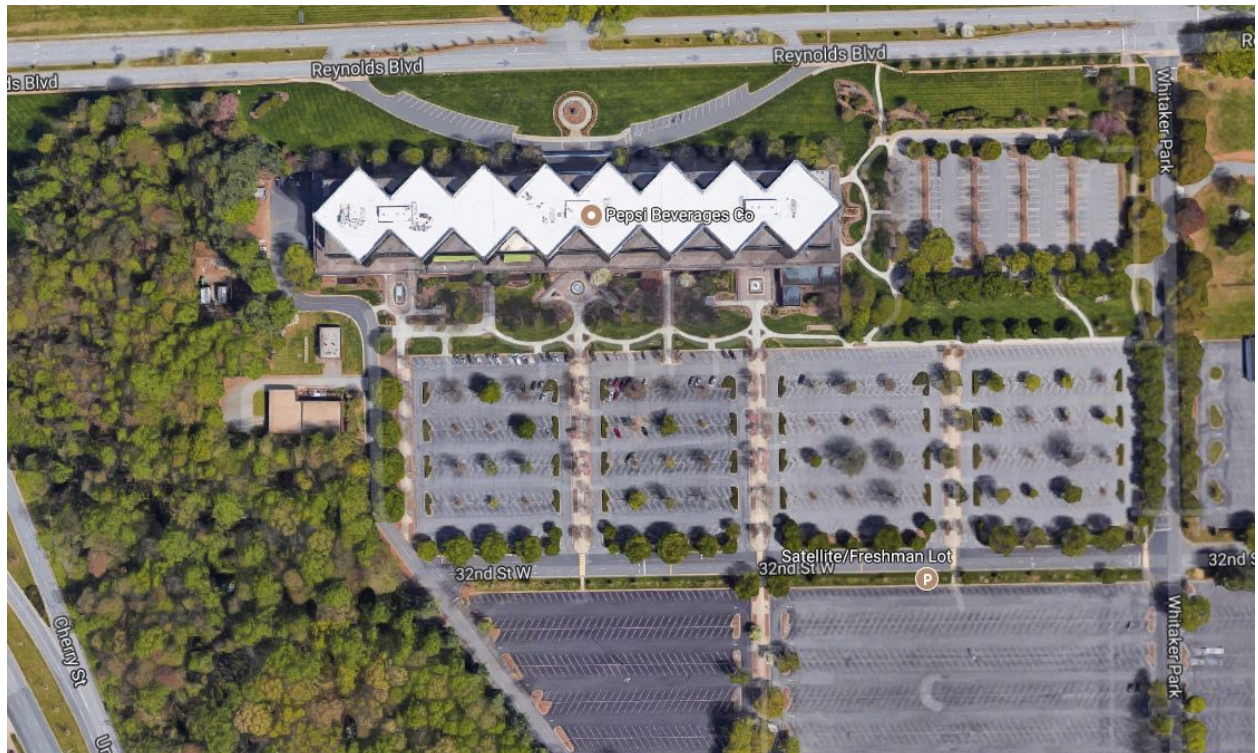
1.1.2 Reynolda Campus



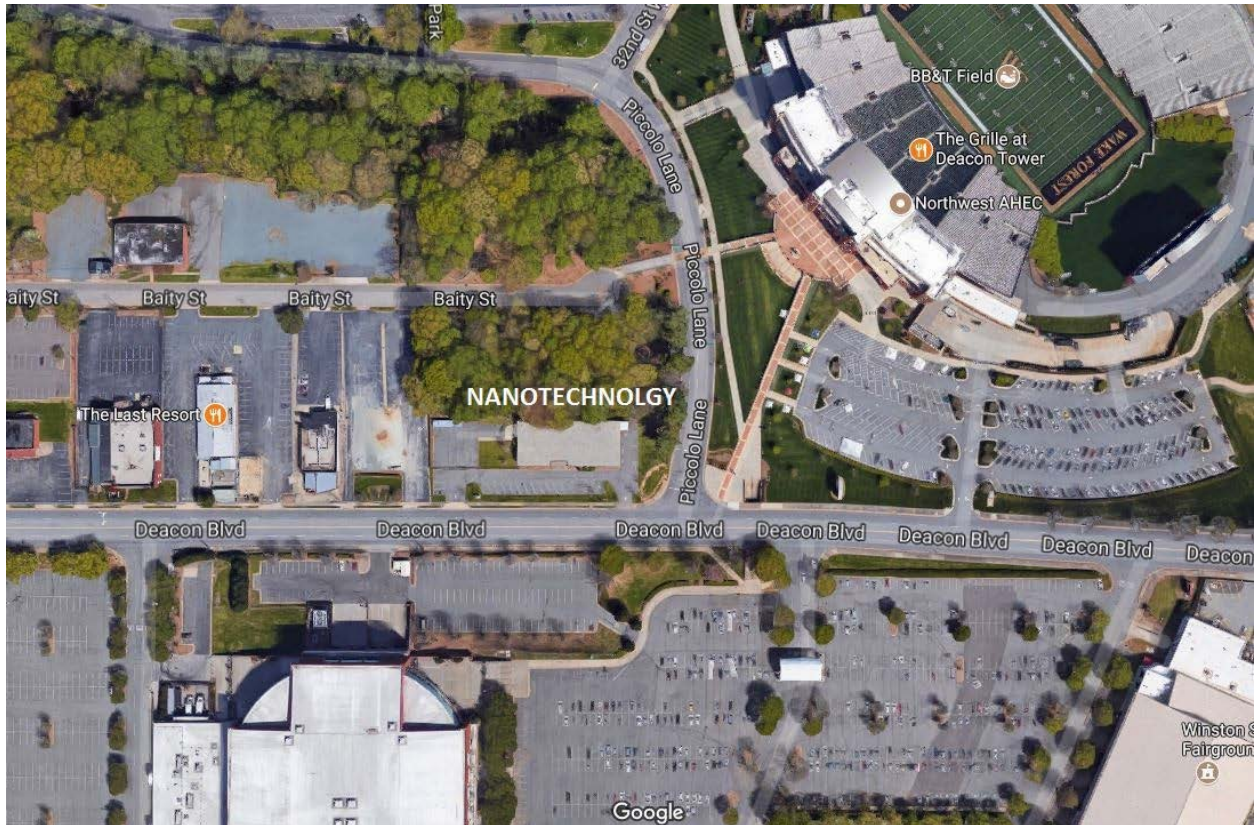
1.1.3 BB&T Field



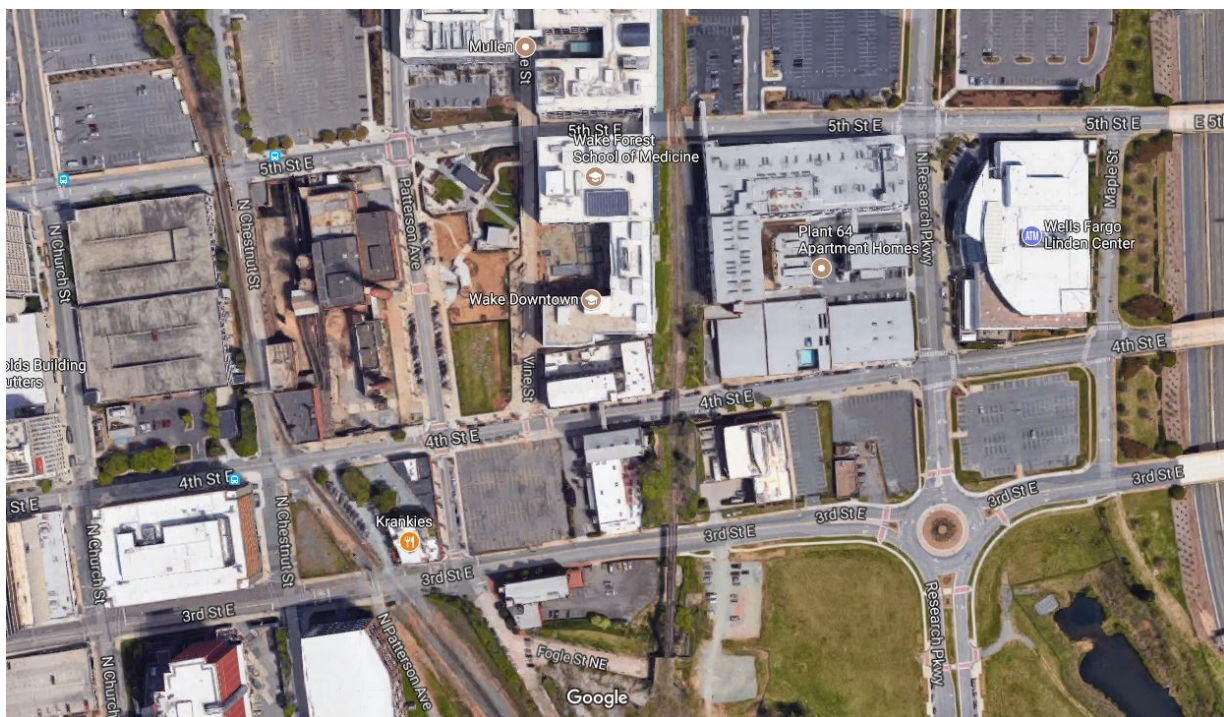
1.1.4 University Corporate Center



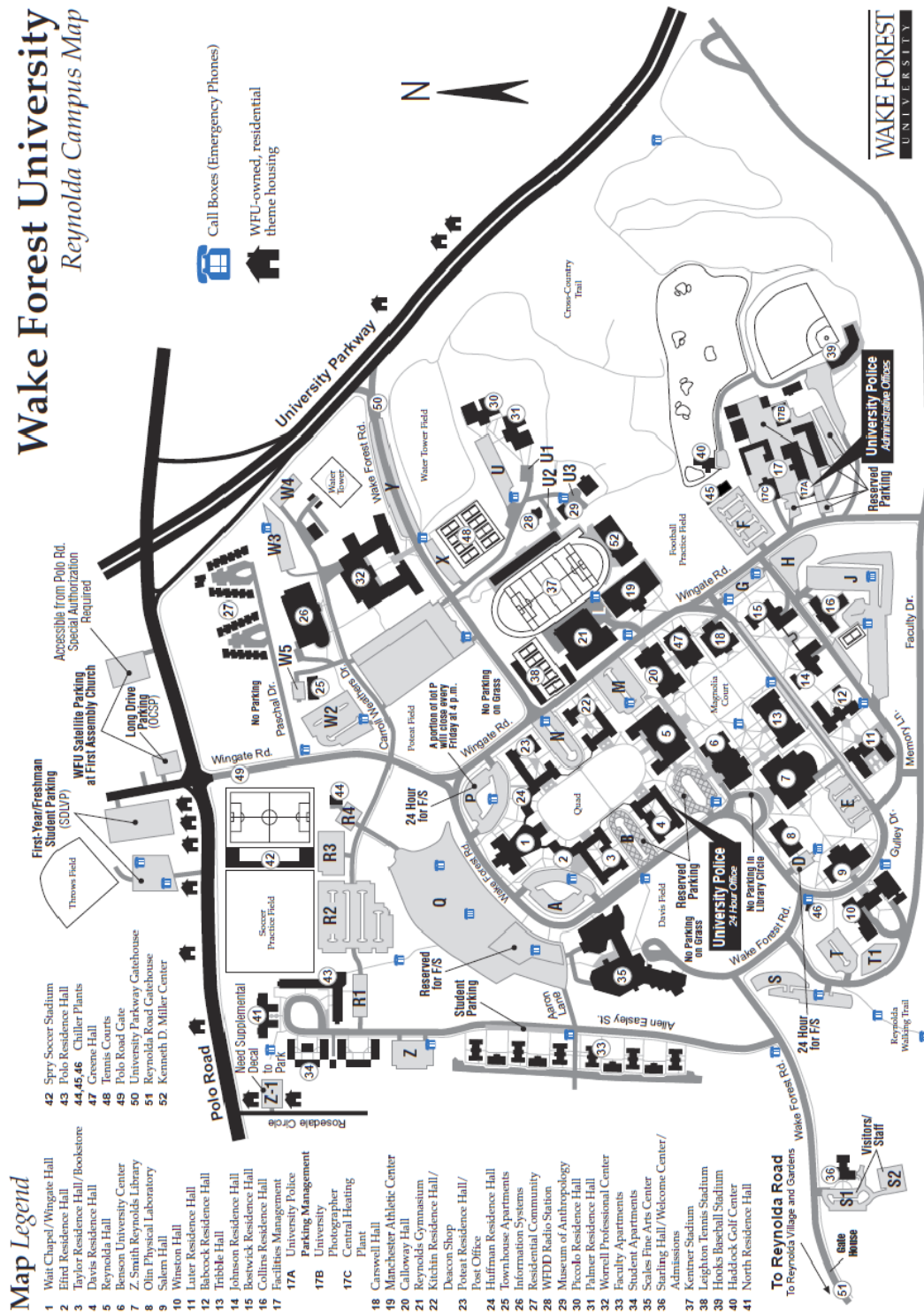
1.1.5 Center for Nanotechnology



1.1.6 Wake Downtown B60



1.2.1 Emergency Call Boxes – Reynolda Campus



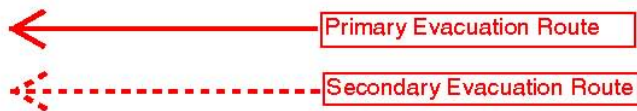
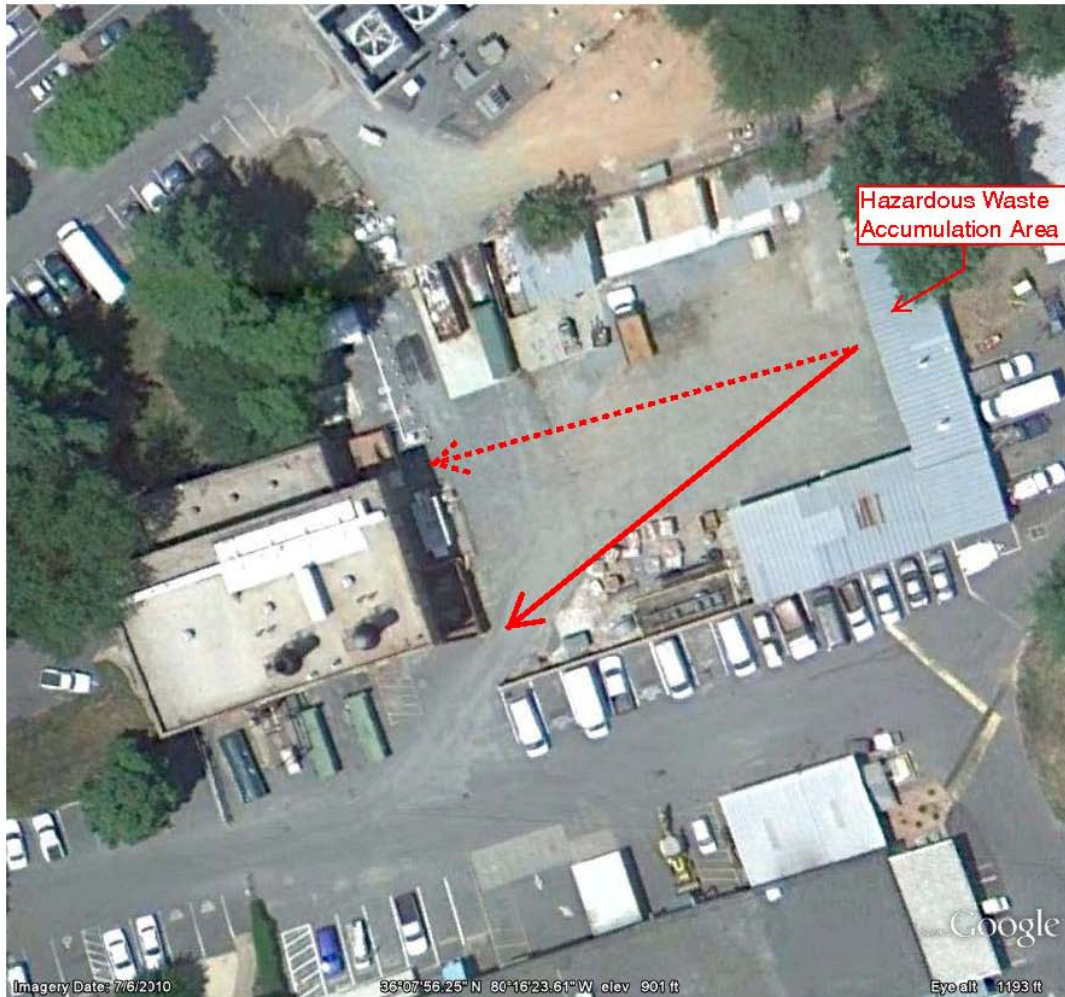
REYNOLDA CAMPUS MAP

These areas are to be used in the event of a building evacuation. Building occupants should evacuate to an assembly area which is approximately 300 feet from the building and away from emergency service vehicles.

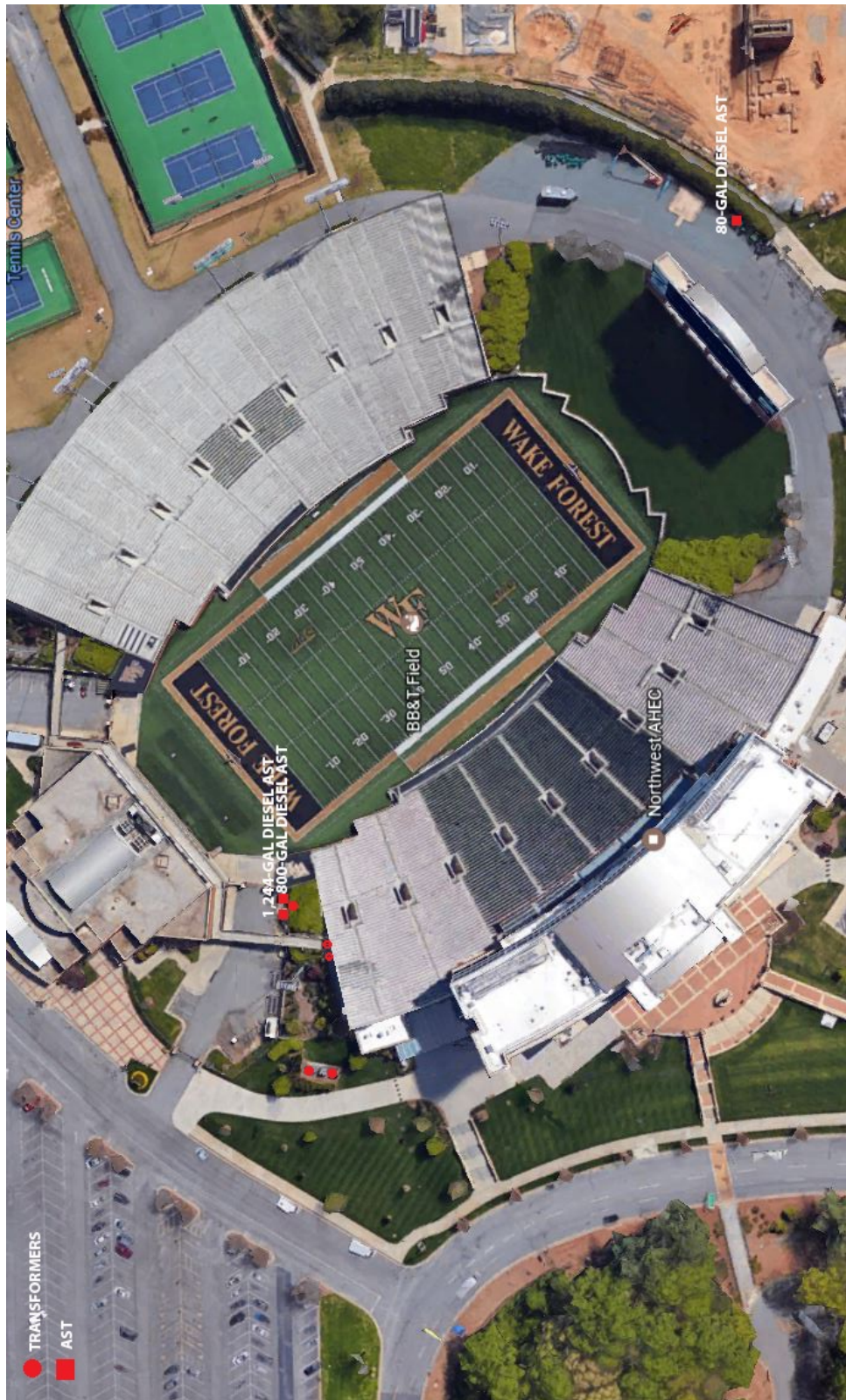
In the event of other campus emergencies, people may be directed to alternate locations.



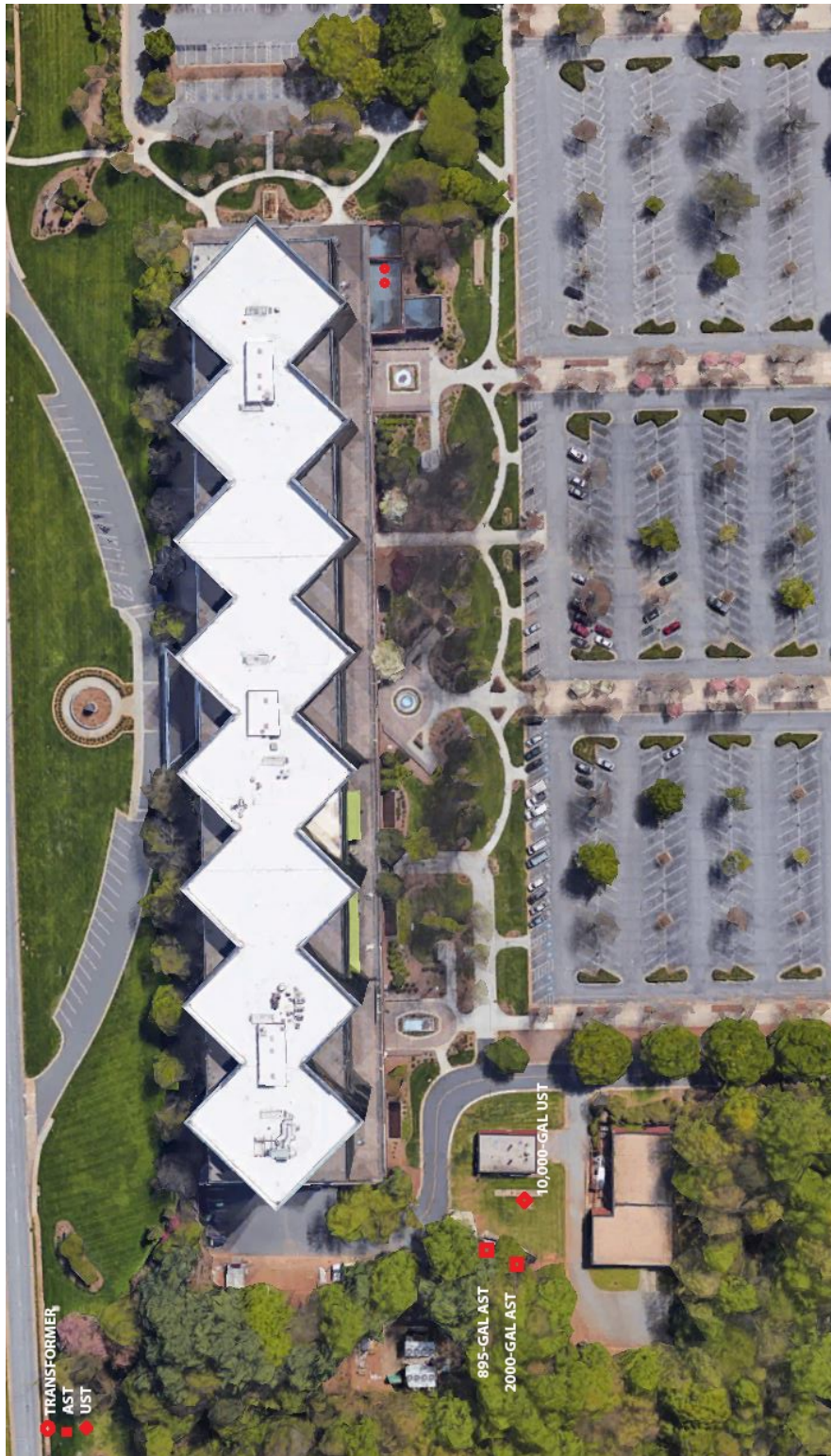
1.2.3 Hazardous Waste Accumulation Storage Area Evacuation Route – Reynolda Campus



1.2.4 BB&T Field – Oil-filled Transformer and Aboveground Storage Tank Locations

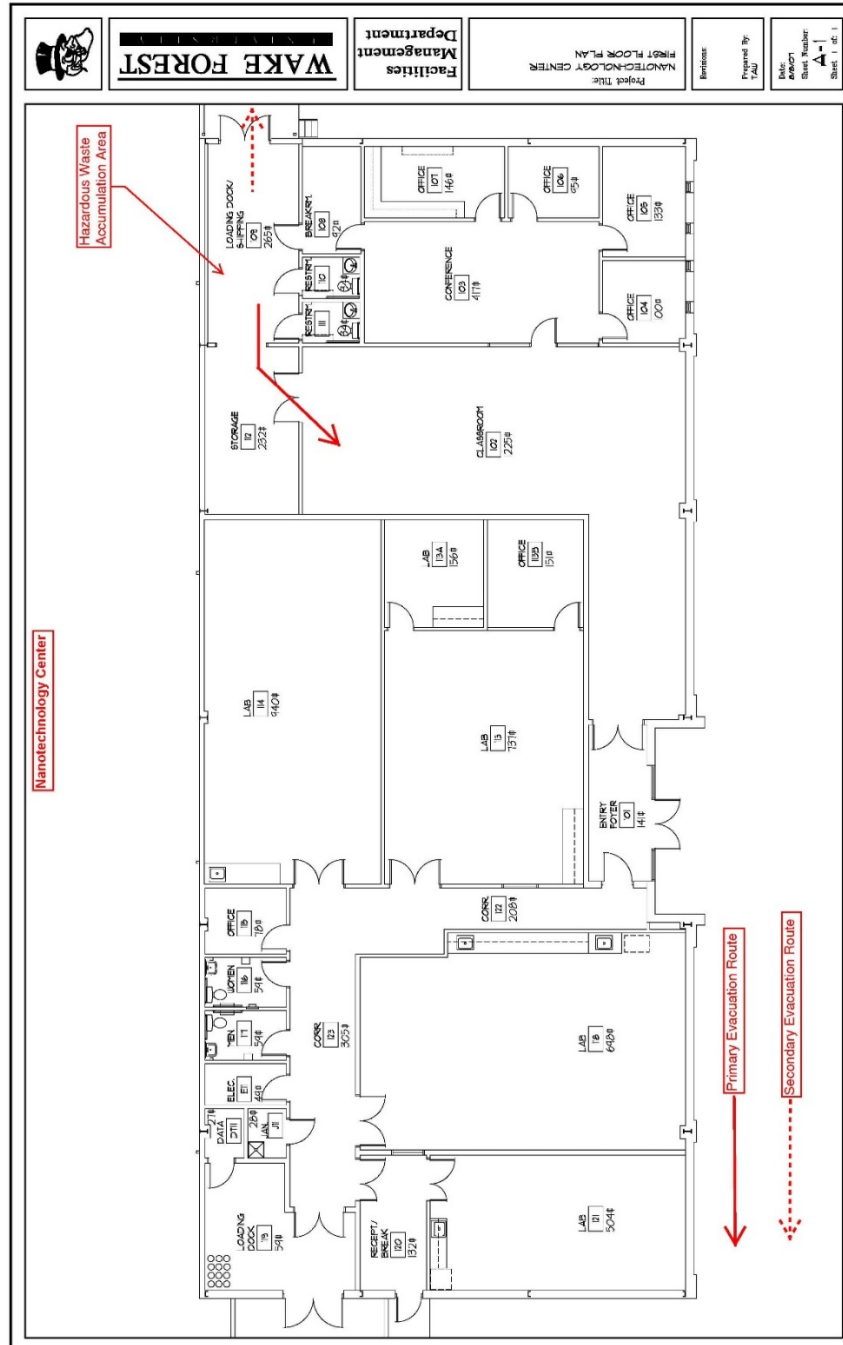


1.2.5 University Corporate Center – Oil-filled Transformer and Aboveground Storage Tank locations

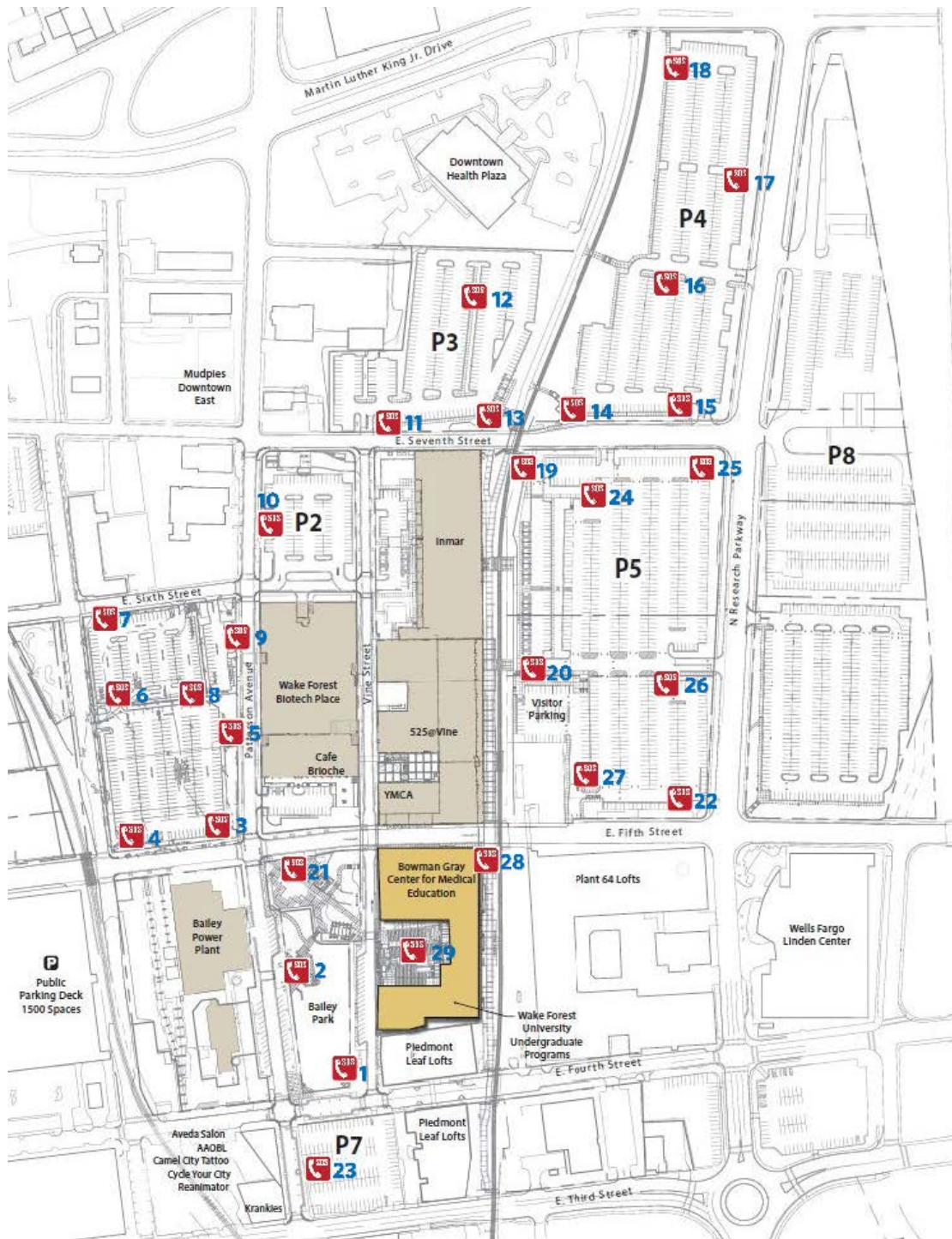


1.2.6 Nanotechnology Center

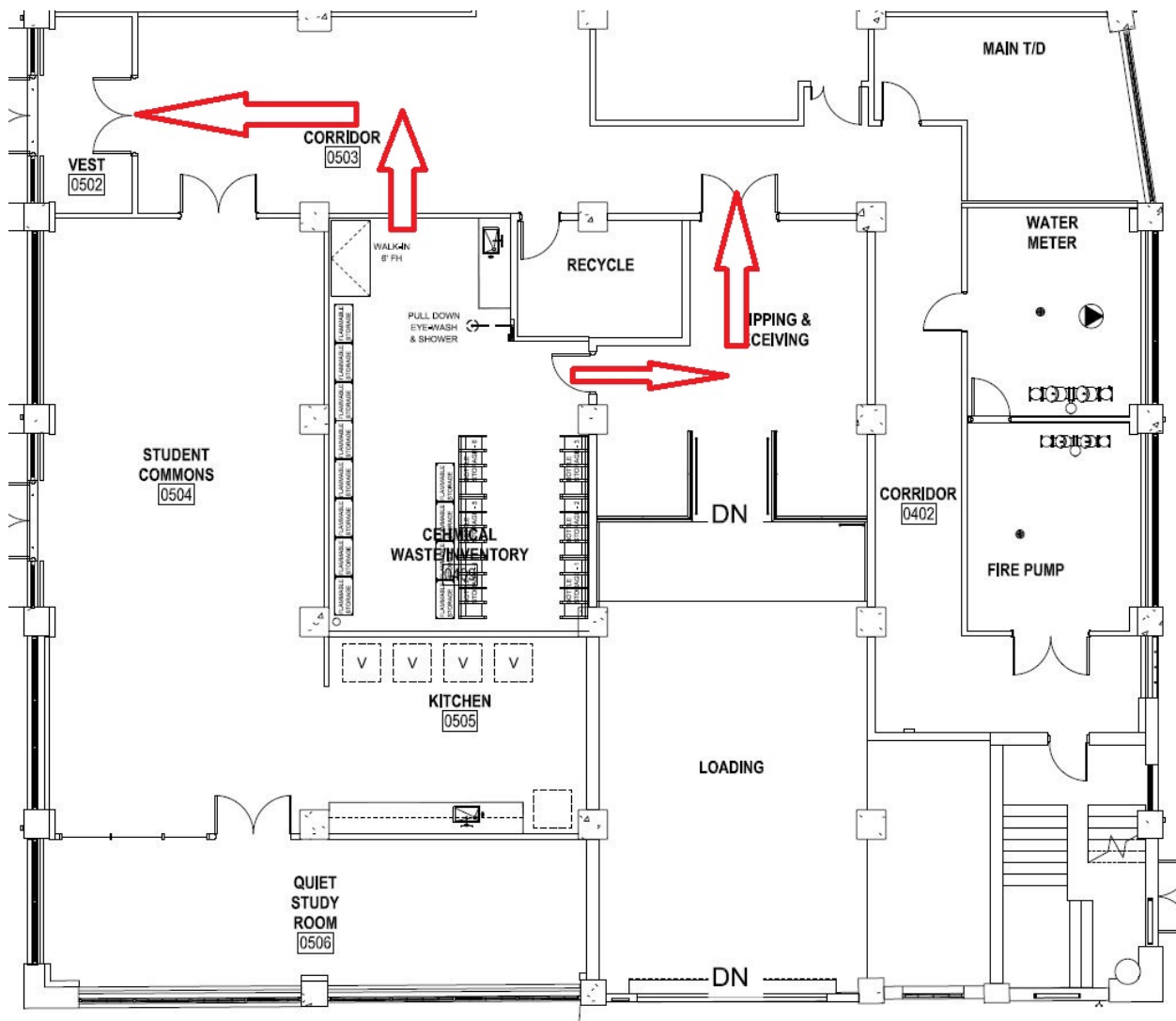
Hazardous Waste Accumulation Area Evacuation Route - Nanotechnology



1.2.7 Wake Downtown – Emergency Call Box Locations



1.2.8 Hazardous Waste Accumulation Area Evacuation Route – Wake Downtown



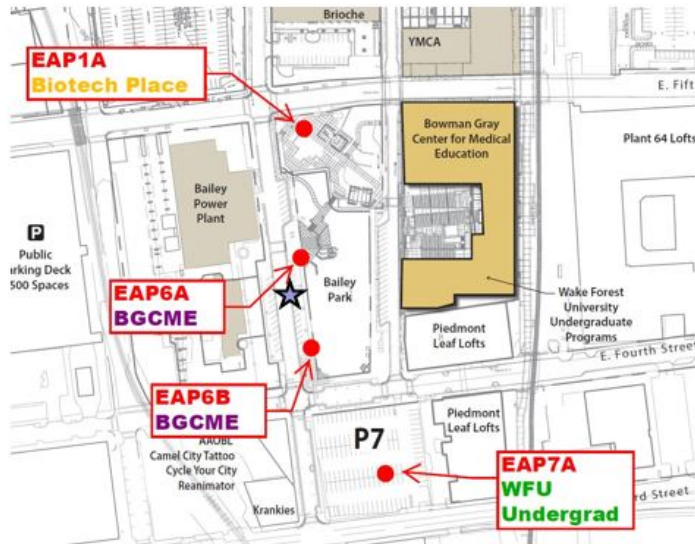
1.2.9 Designated Evacuation Assembly Areas - Wake Downtown

Wake Downtown

Monday-Friday between 7am and 7p Designated EAPs

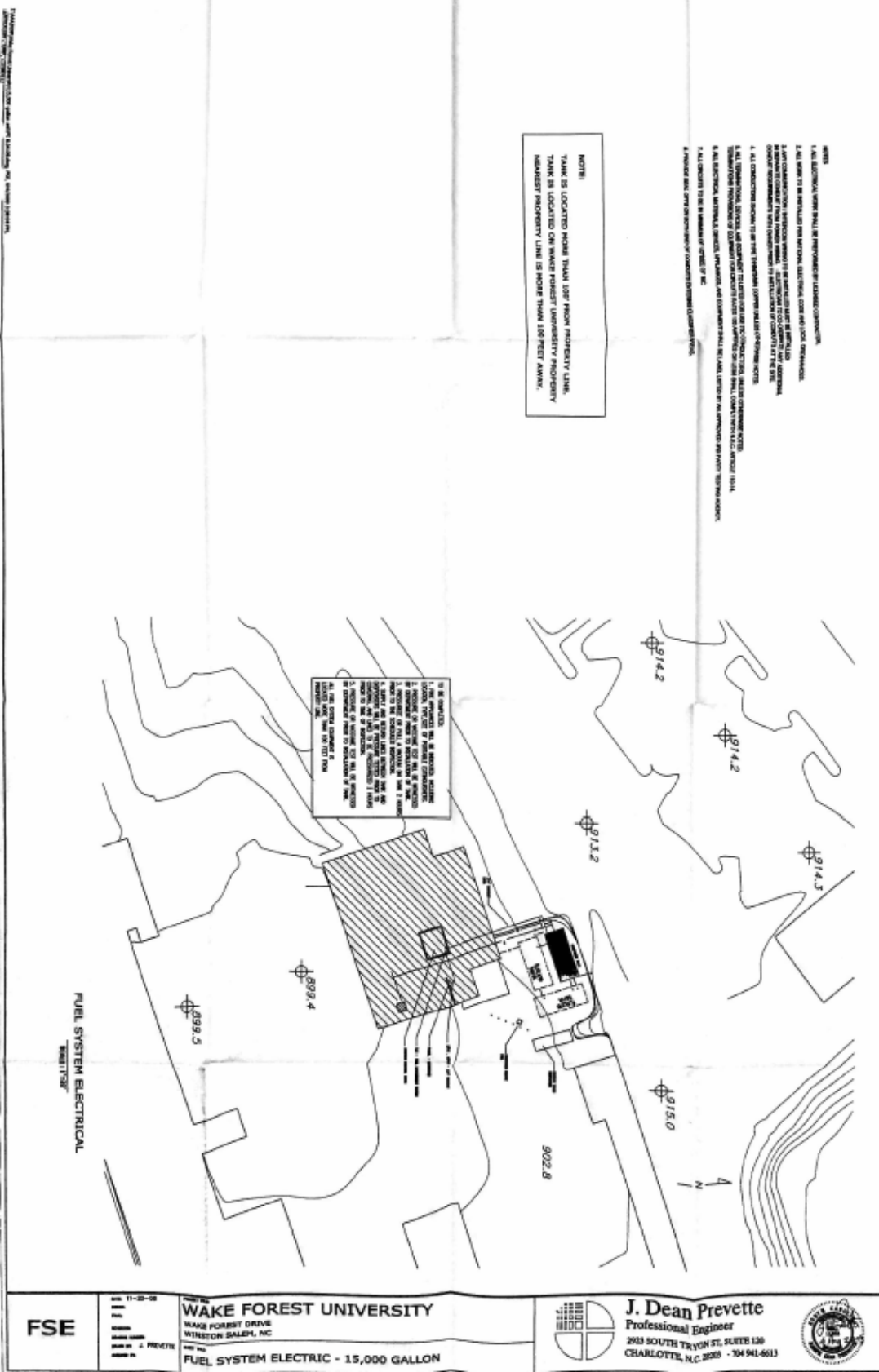


- Dean's Office
- Academic Affairs
- CERTL
- Enrollment Services
- 2nd year medical students
- Student Affairs
- COA
- UMECC
- Resource Center
- 1st year medical students
- Student Wellness



- Afterhours: Please evacuate the building safely and gather by the main entrance (on Vine Street). DO NOT go to your regular hours EAP location. Report to the officer closest to this location (likely in the plaza).

1.2.10 Tank Diagrams



QUANTITY: ONE (1) REQUIRED
WEIGHT: 3,000 lbs ± 10%

DATE: 10-27-08
DRAWING: 1000015002

PLANT APPROVED
DATE: 10-27-08
DRAWING: 1000015002

CUSTOMER APPROVAL SIGNATURE/DATE:

1,000 GALLON HORIZONTAL DW ABOVE GROUND TANK

SURFACE PREPARATION/COATING INFORMATION:
INTERIOR SURFACES: N/A
EXTERIOR SURFACES: SSPC-SP-6 COMMERICAL BLAST CLEAN
ONE COAT WHITE URETHANE

LABELING/MARKING: UNDERWRITERS LABORATORIES (U-142) / STI F-821

MATERIAL /CONSTRUCTION/ LABELING INFORMATION:
MATERIAL: CARBON STEEL, ASTM A 58 OR A 588
MATERIAL THICKNESS: PRIMARY TANK SHELL AND HEADS: 7 GA
SECONDARY TANK SHELL AND HEADS: 10 GA

UNDERWRITERS LABORATORIES (U-142) / STI F-821

AGENTS: JONES & FRANK
1000015002
10-27-08

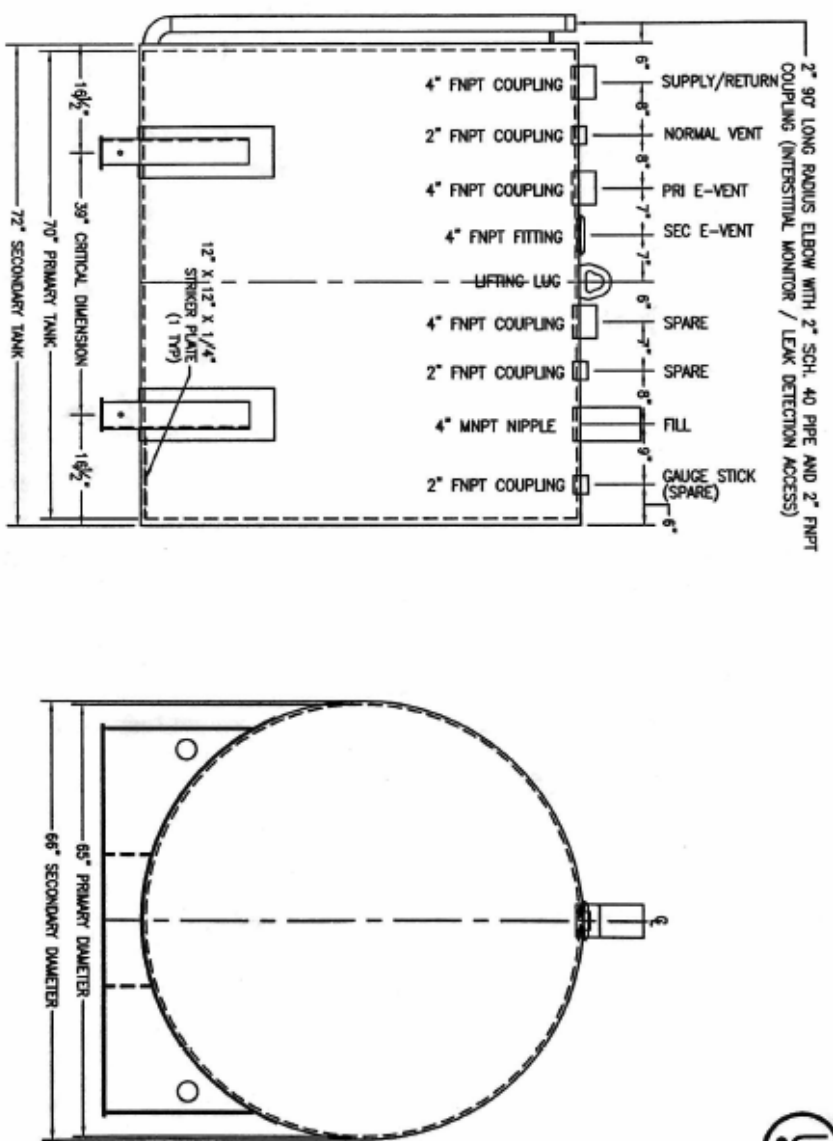
AGENTS: JONES & FRANK
1000015002
10-27-08

AGENTS: JONES & FRANK
1000015002
10-27-08

AGENTS: JONES & FRANK
1000015002
10-27-08

AGENTS: JONES & FRANK
1000015002
10-27-08

AGENTS: JONES & FRANK
1000015002
10-27-08



*SADDLES ARE SEAL WELDED TO TANK

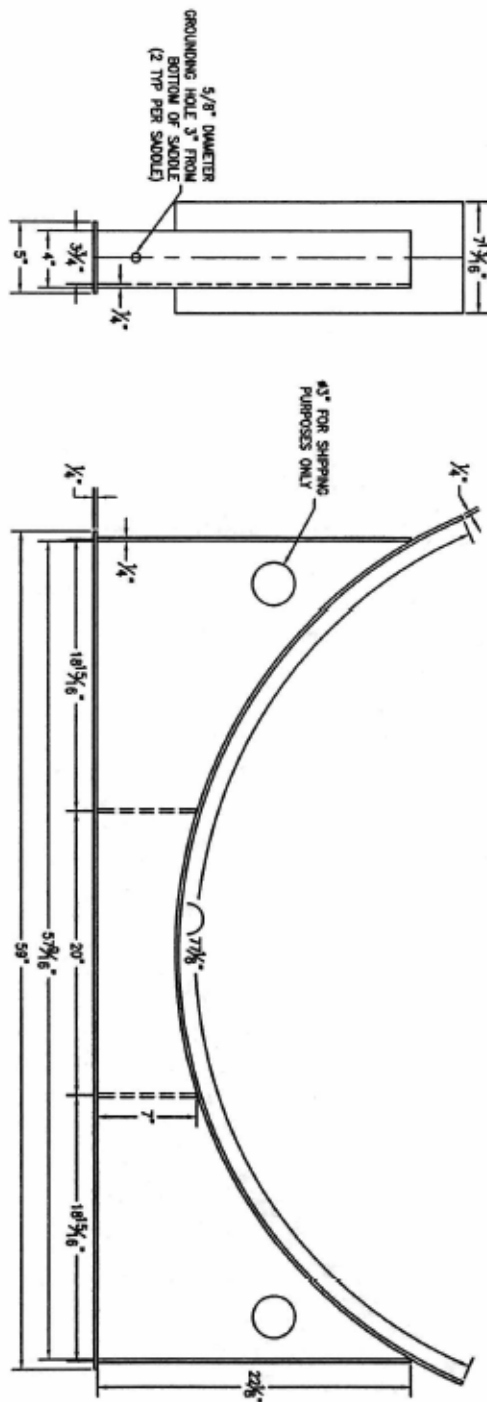
<p>CUSTOMER APPROVAL SIGNATURE/DATE:</p>		<p>QUANTITY: ONE (1) REQUIRED</p>	
<p>SURFACE PREPARATION/COATING INFORMATION:</p>		<p>INNER TANK</p>	
<p>MATERIAL /CONSTRUCTION/ LABELING INFORMATION:</p>		<p>MATERIAL: CARBON STEEL, ASTM A 36 OR A 569 MATERIAL THICKNESS: PRIMARY TANK SHLL AND HEADS: 7 GA</p>	
<p>LABELING/MARKING: UNDERWRITERS LABORATORIES UL-142</p>		<p>AGENT: STEVE BRIDGESTON 4500 WILSON STREET CHICAGO, IL 60631 TEL: 708/261-6142 FAX: 708/261-4444 INTERNET: www.ul.com</p>	
<p>DATE: 10-27-08 BY: JESSIE K. VANCE</p>		<p>DATE: 10-27-08 BY: JESSIE K. VANCE</p>	

70' PRIMARY TANK

6' PRIMARY DIAMETER



BASE PLATE ANCHOR HOLE DETAIL



CUSTOMER APPROVAL SIGNATURE/DATE:

1,000 GAL. 6" TALL SADDLE FOR 68" DIAMETER TANK

SURFACE PREPARATION/COATING INFORMATION:

INTERIOR SURFACES: N/A
EXTERIOR SURFACES: SSPC-SP-6 COMMERCIAL BLAST CLEAN
ONE COAT WHITE URETHANE

MATERIAL /CONSTRUCTION/ LABELING INFORMATION:

MATERIAL: CARBON STEEL, ASTM A 36 OR A 569

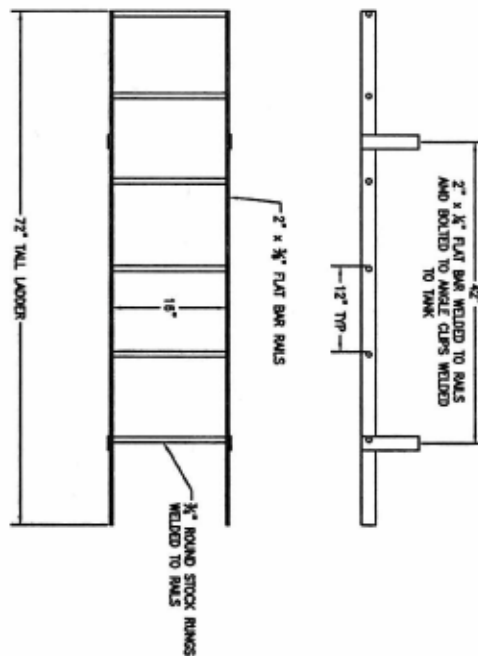
FINAL APPROVED
DRAWING
DATE: 10-27-08
BY: JONES & FRANK

QUANTITY: TWO (2) REQUIRED
WEIGHT: 139 lb. \pm 10%

JONES & FRANK
WESTERN SADDLERY CO.
1350 N. 1ST AVE.
ACAPULCO, CALIF. 94001
TEL: 704/260-8442 FAX: 704/260-8443
WWW.JONESANDFRANK.COM

28-11981/2 1350A 10/27/08

<p>CUSTOMER APPROVAL SIGNATURE/DATE:</p>		<p>72" TALL LADDER</p>	
<p>SURFACE PREPARATION/COATING INFORMATION:</p>		<p>MATERIAL /CONSTRUCTION/ LABELING INFORMATION:</p>	
<p>EXTERNAL SURFACES: SSPC-SP-6 COMMERCIAL BLAST CLEAN ONE COAT WHITE URETHANE</p>		<p>72" TALL LADDER</p>	
<p>FINAL APPROVED DRAWING DATE: 10-27-08 BY: JESSIE/DC/MS</p>		<p>28-11981/3</p>	
<p>WEIGHT: 75 lbs ± 10%</p>		<p>1502A 10/27/08</p>	



2. ANNEX 2 - NOTIFICATIONS

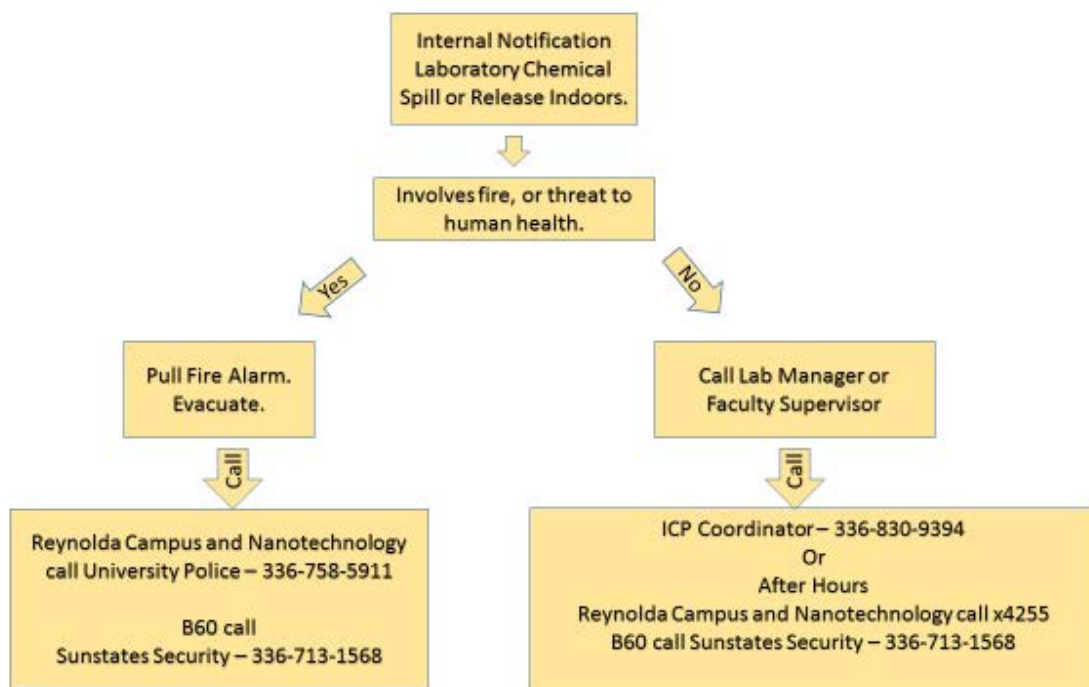
2.1 INTERNAL NOTIFICATIONS

Contact information for key personnel at WFU are located in chart in Section I, Chapter 4. The flow charts below describe the basic notification process to begin the control and clean-up of a spill or release.

2.1.1 Immediate Oral Notifications for Spills

The ICP or Alternate Coordinator is notified upon discovery of chemical and oil spills/releases and is responsible for ensuring all required notifications are made to regulatory agencies. Prior to making any oral or written notifications to regulatory agencies, the ICP must first notify the Senior Vice President. (See Section I, Chapter 4 for contact information.)

2.1.1.1 Indoor Spill



Be prepared to provide the following information:

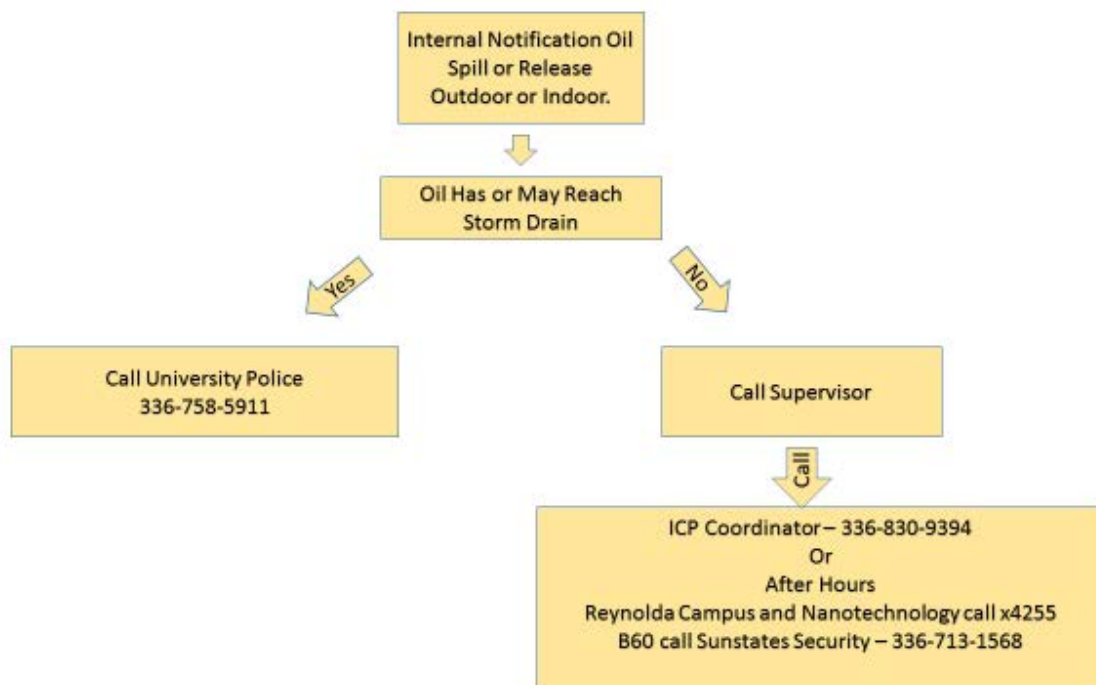
The nature of the emergency (chemical spills, injuries or fire)

The location of the emergency

What chemical has been released (if known)

How much has been released (if known)

2.1.1.2 Outdoor Spill



Be prepared to provide the following information:

The nature of the emergency (oil spill, injuries or fire)

The location of the emergency

What chemical has been released (if known)

How much has been released (if known)

2.2 COMMUNITY NOTIFICATIONS

The ICP will be responsible for determining if additional community resources will be required in the control and clean-up of any spill or release. Depending on the situation, these resources may include the Winston-Salem Fire Department, Winston-Salem Police, the LEPC, or other local agency. Contact information for these resources are listed in chart in Section II, Chapter 2.

If the ICP determines that the facility has had a release, fire, or explosion which could threaten human health or the environment outside the facility, immediate notification must be made to appropriate local authorities. ICP must be available to help appropriate officials decide whether local areas should be evacuated.

The ICP will contact City of Winston-Salem/Forsyth County Emergency Services (Fire, Emergency Medical Services, and Police) if assistance is required at: 911

2.3 FEDERAL AND STATE AGENCY NOTIFICATIONS

2.3.1 Oil Releases to Water

If oil is discharged¹ to water, the ICP or his/her designee will report the incident within 24 hours to:

1. DEQ: 336-771-5000
or NC Emergency Management if after normal business hours, at 800-858-0368.
2. National Response Center (“NRC”): 800-424-8802

The NRC Operator will notify, as appropriate, the U.S. Coast Guard and/or EPA, Region 4.

The following information must be provided to the NRC when reporting oil discharges to water:

- Exact address or location and phone number of the facility;
- Date and time of the discharge and the type of material discharged;
- Estimates of the total quantity discharged;
- Source of the discharge;
- Description of all affected media;
- Cause of the discharge;
- Any damages or injuries caused by the discharge;
- Actions being used to stop, remove, and mitigate the effects of the discharge;
- Whether an evacuation may be needed; and
- Names of individuals and/or organizations who have also been contacted.

2.3.2 Oil Release to Land

The following oil spills to land must be reported to DEQ at 336-771-5000 within 24 hours:

- Any spill \geq 25 gallons;
- Any spill regardless of amount that occurs within 100 feet of surface waters; or
- Any oil spill $<$ 25 gallons that cannot be cleaned up within 24 hours.

After hours reporting should be made to NC Emergency Management, at 800-858-0368.

2.3.3 Oil or Chemical Releases to the Public Sewer

If WFU has reason to believe that an oil release has entered the public sewer system, notification should immediately be made to the Winston-Salem Sewer Authority at 336-765-0130.

¹ For the purposes of this notification, “discharge” refers to the definition as found in 40 C.F.R. Part 110, which is a *harmful quantity* of spilled oil which results in:

- 1) Violation of applicable water-quality standards;
- 2) Production of a film, sheen or discoloration on the water surface or adjoining shoreline; or
- 3) Deposition of a sludge or emulsion beneath the water surface or upon the adjoining shoreline.

2.3.4 Written Notification for Oil Spills

Written notification to EPA Region 4 is required if either of the following criteria is met:

1. A single discharge of oil exceeds 1,000 gallons; or
2. The facility has discharged more than 42 gallons of oil twice within a twelve month period.

40 C.F.R. § 112.4(a).

If one of these criteria is met, WFU will submit the following written information to EPA Region 4 within 60 days:

- Name of the facility
- Name of facility owner/operator;
- Location of the facility;
- Maximum storage or handling capacity of the facility and normal daily throughput;
- Corrective action and countermeasures the facility has taken, including a description of equipment repairs and replacements;
- An adequate description of the facility, including maps, flow diagrams, and topographical maps, as necessary;
- The cause of the discharge, including a failure analysis of the system or subsystem in which the failure occurred;
- Additional preventive measures the facility has taken or contemplated to minimize the possibility of recurrence; and
- Other information pertinent to the discharge that EPA Region 4 may deem necessary.

WFU will amend this Oil SPCC Plan if amendments are necessary as a result of the discharge(s). In addition, WFU will send a duplicate of the above information to oil pollution control personnel at NC DEQ, if required by EPA. See 40 C.F.R. § 112.4(a).

2.3.5 Spills or Overfills from UST

WFU's gasoline UST is not subject to the Oil SPCC regulations, and therefore not subject to the release reporting outlined in Section 9.2 above. However, the UST is subject to the release reporting described in Section 9.1 and below.

2.3.6 Suspected UST Release

Within 24 hours, the following must be reported to DEQ at 336-771-5000:

- The discovery of released regulated substance at the UST site or surrounding area;
- Unusual tank system operating conditions unless the equipment is found to be defective, but not leaking and is immediately repaired or replaced;
- Release detection monitoring results that indicate a release may have occurred, unless:
 - The monitoring device is found to be defective, is immediately repaired, recalibrated or replaced, and additional monitoring does not confirm initial result; or
 - In the case of inventory control, a second month of data does not confirm the initial result.

See 40 C.F.R. § 280.50 and 15A NCAC 02N.0604.

Except as noted above, no written report is required for an oil spill generally. However, the agencies notified of the spill may request a written follow-up report of the incident. For spills determined not to be reportable, WFU will maintain a record of the incident.

The report must include:

- (i) Name and telephone number of reporter;
- (ii) Name and address of facility;
- (iii) Time and type of incident (e.g., release, fire);
- (iv) Name and quantity of material(s) involved, to the extent known;
- (v) The extent of injuries, if any; and
- (vi) The possible hazards to human health, or the environment, outside the facility.

2.3.7 CERCLA / SARA Reportable Release

If a chemical emergency meets the definition of a CERCLA or SARA (see glossary) reportable release, the ICP shall contact the National Response Center at: **1-800-424-8802**.

2.3.8 Hazardous Waste Contingency Plan Implementation

The ICP must note in the operating record the time, date, and details of any incident that requires implementing the contingency plan. Within 15 days after the incident, the ICP must submit a written report on the incident to the Regional Administrator. The report must include:

- (1) Name, address, and telephone number of the owner or operator;
- (2) Name, address, and telephone number of the facility;
- (3) Date, time, and type of incident (e.g., fire, explosion);
- (4) Name and quantity of material(s) involved;
- (5) The extent of injuries, if any;
- (6) An assessment of actual or potential hazards to human health or the environment, where this is applicable; and
- (7) Estimated quantity and disposition of recovered material that resulted from the incident.

3. ANNEX 3 – RESPONSE MANAGEMENT SYSTEM

3.1 GENERAL

Wake Forest University will employ the fundamental principles of NIMS ICS to guide and support the actions of each response management function during a response. The response situations outlined in this document are an extension of the greater WFU Crisis Management Team. Any large scale response will involve several, if not all, Crisis Management Team (CMT) functions. Smaller response situations may involve just a few individuals who can effectively control and mitigate a minor release.

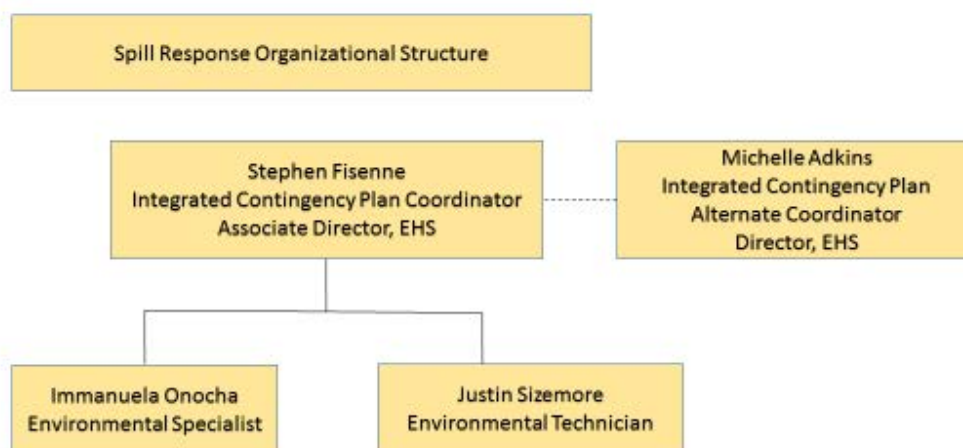
3.2 COMMAND

For purposes of this plan, the ICP Coordinator is also the Alternate Safety Officer for CMT Command, and will be able to provide necessary information to Command regarding any spill or release. CMT Command will then be in a position to disseminate information to Operations, Communications, Logistics, Planning, etc.

The complete organizational chart with names and contacts is available through the office of the University Emergency Manager. The overall command structure is as follows:



For response not requiring activation of the full CMT, the Environmental, Health and Safety Department will take the lead role in isolation, containment and clean-up. The ICP Coordinator, Environmental Specialist and Environmental Technician have all been 40-hour HAZWOPER trained per 29 CFR 1910.120, and are capable of responding to chemical spills and releases on campus and associated properties.



Any incident beyond the capabilities of the EHS Department will require an outside contractor for spill response and clean-up. The University has worked with two companies for the management of larger or more hazardous releases.

Emergency Response	
Zebra Environmental, High Point, NC	336-841-5276 (24 hour)
Shamrock Environmental, Brown Summit, NC	800-881-1098 (24 hour)

Information will be disseminated internally in-person or by two-way radio, mobile phone, or landline as appropriate. The CMT Command will communicate information to first-responders through the University Police Communications Division. Plans for relaying information to news media, community relations, families of students and employees will be handled through the Communications Section of the CMT.

The ICP Coordinator and Alternate are both members of the CMT Command Section as Safety Liaisons. They will oversee the any response process to ensure safety of the responders and protecting students and employees. The *2016 Emergency Response Guidebook*, Safety Data Sheets and *NIOSH Pocket Handbook* will be the primary sources of information in making determinations about evacuations due to chemical spill or release.

The CMT Command Section will coordinate directly with outside agencies and external emergency response teams. Following general NIMS experience, the Fire Department will generally take the lead role in any event requiring full CMT mobilization and assistance from outside departments. The CMT Command Section Head will be the direct liaison to the Fire Department.

3.3 OPERATIONS

3.3.1 Oil Spill or Release

This section identifies WFU's oil spill clean-up equipment, describes oil spill response procedures, and identifies outside responders who may be contacted in the event of an oil release. This chapter also describes disposal procedures for material recovered from an oil release and provides contact information for potential responders. General oil spill response procedures are provided in this chapter, followed by specific procedures organized by type of release.

3.3.1.1 Oil Spill Equipment

All visible spills are immediately stopped and cleaned up using spill kits. An inventory of spill clean-up materials available on campus is provided in Chapter 3.6.3 of this Section. Spill kits are used only by trained personnel who are familiar with the hazards posed by the spilled material, and are knowledgeable of how to manage the spill clean-up residue. Any employee who has basic oil spill response training may respond to small leaks or spills that do not pose significant risks to health or safety. The WFU Environmental, Health and Safety (EHS) Department should be called to handle larger spills. The contents of the spill kits are periodically inspected by the IPC Coordinator or designee to ensure that they are fully stocked and ready for use in the event of an oil spill. If, during an inspection, items are noted as missing from the spill kit, the missing contents are ordered and replaced within the kit as soon as reasonably possible.

3.3.1.2 Oil Spill Response

As described above, WFU is equipped with strategically placed spill kits containing absorbent clean up materials that will generally be used to contain and clean up minor spills. Properly trained WFU staff may respond to oil releases using the spill response procedures outlined below.

For spills that are beyond the control of the WFU EHS Office and the standard clean up/control methods discussed in this chapter, the IPC Coordinator will contact the Fire Department and an emergency clean up contractor, if necessary. Regardless of the amount spilled, if an oil release reaches a stormwater catch basin or a surface water body, the IPC Coordinator will immediately contact the Fire Department. The IPC Coordinator and his/her Alternates are the primary responsible parties at WFU for the coordination of any oil response and clean-up effort. They will draw upon the resources of the EHS Department, as necessary.

The Fire Department will usually be the first agency to respond to a release and is typically responsible for contacting other state or regional emergency response agencies in the unlikely event they are needed. After the initial response, the Fire Department may choose to turn over responsibility for the release clean up to WFU's private clean up contractor. The private clean up contractor has sufficient equipment and materials to handle any potential oil release at WFU, including absorbent materials, containers, earth moving equipment, and vacuum trucks. It is estimated that the largest potential release from a WFU oil storage facility would be 15,000 gallons, which is the capacity of the largest AST. There is the potential for a release to occur if an oil delivery vehicle were to be involved in an accident on WFU property. In the extremely unlikely event that the private spill contractor is unable to handle the release response, County

and/or State emergency response agencies will be summoned. WFU has emergency mutual aid agreements in place with the Fire Department, Police Department, and a private spill contractor.

3.3.2 General Oil Spill Response Procedures

An oil spill could occur at WFU due to accidents during oil handling activities or tank/container/containment failure. In the event of a minor oil release, it is WFU's policy to place absorbent booms and/or drain covers/mats on all floor drains, catch basins, and any other drainage pathway to prevent oil dispersion and to limit the flow to the extent possible. The general oil spill response procedures outlined in Appendix 2 should be followed for all oil spills.

3.3.3 Response to Oil Releases from Specific Sources

3.3.3.1 Tank Overfill During Delivery

Oil deliveries are always monitored by the carrier and by WFU staff to limit the potential for overfills. However, if oil delivery equipment fails or overfill occurs for some other reason, the carrier will immediately take steps to stop the oil delivery process. The carrier and WFU staff will deploy oil containment barriers (i.e., boom) and absorbent material to stop the spread of the spill. It is WFU policy that any nearby stormwater catch basins are protected with covers or absorbent booms during tank filling operations. Once the spill has been contained, the released oil is cleaned up according to the procedures outlined in Appendix 2.

3.3.3.2 Tank/Container Failure

If there is visual evidence of an AST, UST, or oil container failure which results in a minor spill, absorbent materials will be used to contain and clean up the spill. The container or tank and associated piping and equipment will be inspected to identify the origin of the release. If oil was released due to faulty equipment or broken piping, WFU will immediately take the equipment out of service and correct the problem. If it is determined that a tank leaked, the IPC Coordinator will immediately contact an emergency contractor to pump out the tank, which will remain empty and out-of-service until it is repaired or replaced.

3.3.3.3 Equipment Failure

If it appears that an oil-filled transformer or hydraulic elevator, compactor or lift reservoir is leaking, the released oil will be immediately contained and cleaned up. The appropriate contractor will be called to service the faulty equipment. Precautions will be taken to restrict unauthorized individuals from all sites that pose potential safety risks.

3.3.3.3.1 Transformer Leak at University Corporate Center

Each UCC transformer contains 472 gallons of mineral oil. Wake Forest University must maintain adequate supplies for containment of that volume of oil. To adequately implement this plan, Wake Forest University personnel must be trained for containment of oil releases and clean up of minor releases. Clean up of larger releases will be performed by an Emergency Response Contractor. Spill kits containing absorbents and protective equipment are located in the cage at the loading dock of the Wake Forest University Corporate Center.

The transformers are located in an area that appears to provide sufficient containment for the contents of the transformers and six inches of precipitation. Based on the height of the doorway and the structure dimensions, the containment area is approximately 25 feet by 15 feet by 3.5 feet or about 9,800 gallons. This area has an earthen floor that is likely sufficiently impervious to contain oil until cleanup occurs, without allowing a discharge to navigable waters or shorelines. However, since soil characteristics, compaction data, and possible subsurface conduits have not been studied, it has been decided to address potential releases from the transformers through implementation of an Oil Spill Contingency Plan.

For qualified oil-filled operational equipment, oil spill regulations, codified in 40 CFR 112.7(k), allow owners and operators to provide an Oil Spill Contingency Plan instead of secondary containment. The transformers each contain an oil storage container in which the oil is present solely to support the function of the unit. These containers would, therefore, be considered oil-filled operational equipment according to oil spill regulations contained in the Code of Federal Regulations, Title 40, Part 112 (40 CFR 112).

3.3.3.4 Vehicle Accidents

In the event of a vehicle accident in which a minor spill of oil occurs, absorbent materials will be used immediately to contain and clean up the spill. Absorbent booms will be placed around catch basins and other drainage pathways to prevent oil dispersion.

3.3.4 Chemical Spill or Release – all locations

The majority of chemical use on the WFU campuses occurs within research and teaching laboratories. Facilities and Campus Services will also use chemicals for water treatment, painting and sealing, and custodial operations.

The Integrated Contingency Plan will go into effect immediately under the following conditions:

1. Fire or explosion related to hazardous material.
2. Sudden or non-sudden release involving a *Poison by Inhalation* hazard.
3. Sudden or non-sudden release that would require use of greater than normal housekeeping for minor spills.
4. Any incident that is or may become a threat to human health or the environment.

The following chemical spill response procedures are taken from Prudent Practices in the Laboratory (National Academies Press, 2011):

3.3.4.1 Materials of low flammability that are not volatile or that have low toxicity.

This category of hazardous substances includes inorganic acids (e.g., sulfuric and nitric acid) and caustic bases (e.g., sodium and potassium hydroxide). For cleanup, appropriate PPE, including gloves, chemical splash goggles, and (if necessary) shoe coverings, should be worn. Absorption of the spilled material with an inert absorbent and appropriate disposal are recommended. The spilled chemicals can be neutralized with materials such as sodium bisulfate (for alkalis) and sodium carbonate or bicarbonate (for acids), absorbed on vermiculite, scooped up, and placed in a marked container for collection and disposal by EHS.

3.3.4.2 Flammable solvents.

This category includes acetone, petroleum ether, pentane, hexane, diethyl ether, dimethoxyethane, and tetrahydrofuran. Alert personnel in the laboratory, extinguish open flames, and turn off any spark-producing equipment. The spilled solvent should be soaked up with spill absorbent or spill pillows as quickly as possible. If this cannot be done quickly, evacuation should occur, and emergency personnel (911) should be called. Used absorbent and pillows should be sealed in a marked container for collection and disposal by EHS. Nonsparking tools should be used in cleanup.

3.3.4.3 Highly toxic substances.

The cleanup of highly toxic substances should not be attempted alone. Emergency responders should be notified, and the ICP Coordinator should be contacted to obtain assistance in evaluating the hazards involved. These professionals will know how to clean up the material and may perform the operation.

3.3.4.4 Gas Cylinder Leak

Leaks from compressed gas cylinders can be life threatening by asphyxiation, poisoning, and / or explosion. See the follow the information below on Emergency Action for Handling Leaking Compressed Gas Cylinders if you suspect a gas leak.

Emergency action for handling leaking compressed gas cylinders

Air Products takes every reasonable precaution to see that its products come to you safely. This concern for safety doesn't end with delivery, but should be continued by you and all other customers by following seven general precautions.

General precautions

1. Know and understand gas properties

Know and understand the properties, proper uses, and safety precautions of your gases before using them. Consult the Air Products Safety Data Sheets (SDS) and/or Safetygrams for safety information about these gases.

2. Know and understand the gas package

Know and understand the package for each of the gases you use. The package consists of two distinctive parts—the cylinder and the cylinder valve. Again, consult the appropriate MSDS materials and Safetygrams for your specific products. The following Safetygrams provide basic package information:

- **Safetygram-10**, "Handling, Storage and Use of Compressed Gas Cylinders"
- **Safetygram-14**, "Don't Turn a Cylinder Into a Rocket"
- **Safetygram-15**, "Cylinder Pressure- Relief Devices"
- **Safetygram-23**, "Cylinder Valves"

The Compressed Gas Association (CGA) also offers helpful publications such as the "Handbook of Compressed Gases" and Pamphlet P-1, "Safe Handling of Compressed Gases in Containers," which provide information on the safe handling of gases and their packages.

3. Check your equipment

Before lines and equipment are used, leak-check and evaluate their ability to contain full cylinder pressure. The leak check should be performed with an inert gas, and care should be taken not to overpressurize any components of the system. If the system is not rated for full cylinder pressure, a pressure-reducing regulator must be used and the system should be protected with a pressure-relief device. Leak-check the system at its working pressure. Be certain that materials of construction are compatible with the gases being used.

4. Develop emergency plans

Federal law requires that all facilities using hazardous materials develop emergency plans. Be aware of the potential hazards of the gases being stored and used, and plan for emergencies. Practice implementing emergency plans so that all contingencies are covered. Assign responsibilities and lines of authority. Coordinate with local hospitals and fire departments and inform them of the gases in use so they can be prepared with the needed expertise, equipment, and medical support if an emergency occurs.

5. Provide personal protection

It is necessary to define and provide personal protective equipment (PPE) for routine operations, as well as for emergencies. It is important to establish a policy that requires personnel to wear the proper PPE for each job. Gloves, face protection, and sensible work uniforms for routine tasks, as well as self-contained breathing apparatus (SCBA) and special protective clothing required for emergencies, should be made available. In addition, gas cabinets, eye washes, safety showers, and fire extinguishers should be considered when using hazardous materials. Everyone involved must be trained in the proper use of all necessary PPE. Train personnel to recognize when that equipment is needed.

6. Follow the regulations

Comply with all federal, state, and local regulations pertaining to the storage and use of compressed gases. CGA Pamphlet P-1 and the National Fire Protection Association (NFPA) codes provide excellent guidance.

7. When in doubt

When in doubt about the handling or use of any Air Products gases or equipment, or the hazards of a particular gas, contact your local sales office or call our Technical Information Center at +1 (800) 752-1597.

Leaks

Cylinder leaks usually occur at welded seams (on low-pressure cylinders) or at the cylinder valve. Proper quality control of materials and inspections, as required by the Department of Transportation (DOT), lessen the probability of cylinder leaks.

Compressed gas suppliers are required to inspect cylinders for visual damage each time the cylinders are filled. In addition, gas producers must make certain the cylinder closure is completely leak-tight, and that cylinders are internally inspected and hydrostatically tested at the prescribed time intervals. The purpose of these inspections is to verify that the cylinder is in sound condition and that it will be safe during transportation. In spite of such precautions, leaks can develop from handling in transit, during storage, and during use. The greatest leak potential is with the cylinder valve. There are four distinct areas where leaks at the cylinder valve can occur:

1. Valve threads

Leaks are possible at the valve threads where the valve screws into the cylinder; these are commonly referred to as "neck leakers." These types of leaks cannot and should not be repaired in the field. To do so is a violation of a very important safety practice—NEVER repair equipment under pressure. Leaks of this nature should only be handled with the assistance of the supplier.

2. Pressure-relief device

Leaks can occur at two points on the pressure-relief device—around its threads or through its relief channel. Again, leaks at the pressure-relief device cannot and must not be repaired in the field. To attempt field repair is a violation of two very important safety practices. NEVER attempt to repair equipment under pressure and NEVER tamper with pressure-relief devices. Tampering with the pressure-relief device compromises the safety of the cylinder. Leaks through the pressure relief channel can become severe, and all personnel must be evacuated from the immediate area. Contact your supplier for immediate assistance. See Air Products' Safetygram-15, "Cylinder Pressure-Relief Devices."

3. Valve stem

Leaks can occur along the valve stem through the packing or diaphragms. Leaks of this type can be stopped by closing the valve and venting any pressure from the outlet. Leaks of this type should be reported to your supplier so they can advise you if that particular valve design will allow a packing adjustment to correct the problem or if arrangements must be made for a safe and proper return of the cylinder. Diaphragm valves cannot be repaired or adjusted in the field. See Air Products' Safetygram-23, "Cylinder Valves."

4. Valve outlet

Leakage can occur at the valve outlet, due to leak-through at the seat. Many times this can be corrected or prevented by using proper valve operational techniques, which can be found in Safetygram-23, "Cylinder Valves." When proper closing procedures fail to completely stop leakage, a pressure-tight outlet seal can be installed to stop the leak.

Leaks in the valve area are generally very small and do not normally change in size when the product

in the cylinder is an oxidant, inert, or flammable compressed gas, or a mixture of these gases. When the leak involves a corrosive product, however, the leak will generally worsen because the corrosive material attacks the leak point.

Any hazardous material that is being released to the atmosphere in an uncontrollable manner requires that proper actions be taken to minimize exposure to personnel and equipment. The following emergency procedures—though general—are extremely important in reducing the dangers of exposure to a hazardous materials leak.

Before any action can be taken, you must first properly identify the hazards. This is not always simple since most products have more than one hazard. Remember, the DOT shipping classification is of limited value because it may not define all of the hazards of a particular product. Anhydrous ammonia is an excellent example. In the United States, anhydrous ammonia is shipped as Nonflammable Gas, Class 2.1. However, anhydrous ammonia is also toxic, corrosive, and flammable. The best available reference for the quick identification of any product's hazards and properties is the SDS. In the event of a leak, the SDS will provide enough information for you to take the appropriate actions to immediately stabilize the situation. The final resolution of the problem should involve the supplier. No one knows a product and its package better than its supplier; the supplier has ultimate responsibility for the product and the package.

Inerts

An inert gas is one that exhibits great stability and extremely low reaction rates under normal temperature and pressure conditions. Two principal hazards exist in dealing with inert

gases: asphyxiation and pressure. Inert gases, when released in sufficient quantity, can displace the oxygen in the atmosphere and introduce the potential hazard of asphyxiation. OSHA sets a minimum limit of 19.5% oxygen for work areas. Working in concentrations below this level requires use of a supplied air source. Consult Air Products' Safetygram-17, "Dangers Of Oxygen Deficient Atmospheres."

Second, compressed gas cylinders represent a potential hazard due to the energy they contain at pressure. Improper handling can result in a high-pressure energy release. Isolate any leaking cylinders of inert gases in a well-ventilated area. Move leaking cylinders only if it can be done safely. Once the leaking cylinder is isolated, contact your supplier for help in resolving the problem. Clearly identify the problem and return all problem cylinders to the supplier for proper repair.

Flammables

Flammable gases have the same hazards as the inert gases, for example, pressure and asphyxiation, plus the potential for fire and/or explosion. If it can be done safely, move and isolate any problem cylinder in a well-ventilated area free from any ignition sources. Post prominent signs in such an area that warn of potential fire hazards and the need for elimination of any ignition sources.

If ignition takes place at the source of the leak, do not try to extinguish the flame unless the supply of flammable gas can be stopped. Extinguishing a fire without eliminating the flammable gas supply can result in an accumulation of the gas and a possible explosion. If the flammable gas source cannot be stopped, action must be taken to cool and to protect nearby equipment and cylinders from the fire.

Contact your supplier immediately for support.

Oxidants

Oxidants are substances that support combustion and enhance the combustibility of other materials. The principal emergency action to take with oxidizers is isolation of the leaking cylinder in a well-ventilated area free from any combustibles and ignition sources. The area should then be posted to prevent access and to alert personnel to the hazard. As always, contact your supplier for help and to advise them there is a problem with one of their products.

In many cases, oxidant materials may also be corrosive and/or toxic. The following sections address these hazards.

Corrosives

Corrosives are substances that erode and deteriorate materials on contact, including metals, fabrics, and human tissue. As mentioned, leaks from cylinders containing corrosives may escalate because the corrosive material may attack the leak point, making it larger. Corrosives are generally toxic, so follow the precautions cited in the following section on toxics.

The initial stabilization for a leaking cylinder containing corrosives is isolation in a well-ventilated area. Move the cylinder only if it can be accomplished in a safe manner. Contact the supplier before taking any steps such as disposal, or containment and diversion. Specific PPE, including acid suits and self-contained breathing apparatus (SCBA), may be required if the cylinder must be approached. Do not use any of this equipment unless you are trained in its use. Further steps to collect and direct the escaping gas to a disposal medium will limit exposure of people and equipment to the product.

Steps should also be taken to eliminate moisture from the leak point. Take such action only with supplier assistance.

Toxics and poisonous materials

Leaks involving toxics and poisonous materials also require immediate evacuation of the contaminated area. Isolate the cylinder in a well-ventilated and secure area. However, move the cylinder only if it can be done in a safe manner. Direct escaping gas to either an appropriate disposal unit or a forced ventilation system where it can be safely diluted and remotely vented. Personnel working with toxic and/or poisonous gases should have self-contained breathing equipment available and must be trained in its proper use. Many poisonous gases also have other hazardous properties, for example, corrosivity and flammability. It is important to recognize all the hazards of a material so that proper action can be taken without risk to anyone.

The above procedures describe the type of action to take when the leak is of a minimal size and corrective action can be taken without risk to personnel. Leaks of a large nature require more sophisticated response efforts. Emergency plans must be based upon the nature of the product and should include:

- Evacuation of personnel
- Rescue of injured people by crews equipped with the necessary PPE for their own protection and who have been trained in the proper use of PPE.
- Corrective action to minimize the leak or at least minimize exposure to people and equipment

- Assuring that all necessary resources are available for the final resolution of the situation; these may include the deployment of customer teams, police, fire departments, and supplier assistance
- Fire-fighting action
- Decontamination
- Written documentation and critique

What is an emergency?

An emergency is any actual or potential release of a hazardous material that cannot be stopped by closing the product's cylinder or container valve.

The Air Products Emergency Response System

The Air Products Emergency Response System was created to provide quick, efficient emergency assistance to our customers through trained technical personnel. You can activate the Air Products Emergency Response System by calling our toll-free emergency numbers: 1-800-523-9374 in the continental U.S. and Puerto Rico, or +1-610-481-7711 elsewhere. These numbers are staffed 24 hours a day, 365 days a year. An operator will ask for specific information regarding the incident. Based on this information you will be connected to a technical coordinator who is a specialist with that particular product and package. This specialist can supply technical information on the product and package and can offer resolution options and ideas.

Emergency Response System

T 800-523-9374
(Continental U.S. and Puerto Rico)
T +1-610-481-7711 (other locations)
For regional ER telephone numbers, please refer to the local SDS 24 hours a day, 7 days a week for assistance involving Air Products and Chemicals, Inc. products

Technical Information Center

T 800-752-1597 (U.S.)
T +1-610-481-8565 (other locations)
Monday–Friday, 8:00 a.m.–5:00 p.m. EST
F 610-481-8690
gastech@airproducts.com

For more information, please contact us at:

Corporate Headquarters

Air Products and Chemicals, Inc.
7201 Hamilton Boulevard
Allentown, PA 18195-1501

For regional contact information, refer to the local SDS or contact your local sales representative.



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See Chapters 3.4.2, 3.4.3 and 3.4.4 for a description of the types of chemical wastes generated at Wake Forest University.

3.3.5 Authority to Activate Plan

The ICP Coordinator has full authority to implement the ICP if there is an imminent or actual threat to human health or the environment.

Whenever there is an imminent or actual emergency situation, the ICP Coordinator (or his designee when the ICP Coordinator is on call) must immediately:

- (1) Activate internal alarms or communication systems, where applicable, to notify affected personnel; and
- (2) Notify appropriate State or local agencies with designated response roles if their help is needed.

Whenever there is a release, fire, or explosion, the ICP Coordinator must immediately identify the character, exact source, amount, and area extent of any released materials.

Concurrently, the ICP Coordinator must assess possible hazards to human health or the environment that may result from the release, fire, or explosion. This assessment must consider both direct and indirect effects of the release, fire, or explosion (e.g., the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water run-offs from water or chemical agents used to control fire and heat-induced explosions).

During an emergency, the ICP Coordinator must take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other hazardous waste at the facility. These measures must include, where applicable, stopping processes and operations, collecting and containing released waste, and removing or isolating containers.

If the facility stops operations in response to a fire, explosion or release, the ICP Coordinator must monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate.

Immediately after an emergency, the ICP Coordinator must provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility.

3.3.6 Control and Containment

This is the defensive action to halt the continued spread of a chemical spill or release and limit exposure from a chemical spill or release. These actions may involve public health and welfare protection activities, source control procedures, salvage operations, placement of physical barriers to halt the spread of the

chemical by upstream impoundment, and the employment of certain materials to restrain the effects of the chemical on water sources.

Initial containment will be undertaken only by qualified WFU personnel with authorized and qualified outside spill response contractors assisting as necessary.

Cleanup action will include the use of absorbers and skimmers. Absorbents as listed in Emergency Equipment (Chapter 3.6.3 of this Section) are available and will be used as directed.

Cleanup action for chemical spills released to soil or water may require the use of the spill response contractor(s) identified in this plan.

3.4 PLANNING

3.4.1 Hazard assessment, including facility hazards identification, vulnerability analysis, prioritization of potential risks

3.4.1.1 Oil storage, containment, and delivery procedures

This chapter identifies and describes WFU's oil storage tanks and equipment, including their design, related secondary containment, diversionary structures, and equipment; and transfer operations and locations. This chapter also identifies the most likely causes of potential spills, predicted spill pathways, probable directions, estimated maximum spill quantities, rates of flow, and satisfies many of the requirements of 40 C.F.R. §§ 112.7 and 112.8 (including 40 C.F.R. §§ 112.7(a)(3)(i)-(iii) and 112.7(h) and 112.8(b) and (c)).

3.4.1.2 Bulk Oil Storage

WFU stores oil in aboveground storage tanks (ASTs), underground storage tanks (USTs), electrical transformers and hydraulic elevator reservoirs. At the Wake Forest University Corporate Center, diesel fuel and oils are stored in two emergency generator aboveground storage tanks, two transformers, three underground storage tanks (USTs), day tanks, a trash compactor, and a grease trap. The Facility Diagrams in Annex 1 show the locations of each bulk oil storage container and piece of operating equipment. The diagrams also shows piping and oil transfer locations (AST and UST fill ports), as required by 40 C.F.R. § 112.7(a)(3).

Reynolda Campus stores diesel and gasoline for vehicle and equipment fueling purposes. Both diesel and No. 2 fuel oil for heating and emergency power generation are stored at Reynolda Campus, BB&T Field and UCC. Used oil and motor oil, are also stored in ASTs. The material and construction of all oil storage containers maintained by WFU are compatible with the materials stored and the conditions of storage such as pressure and temperature. Additionally, oil storage containers are constructed in accordance with good engineering practices. Table 1 provides the following information for the USTs and ASTs at WFU: Tank Identification Number; Location; Total Storage Capacity (gallons); Contents; Material of Construction; Means of Secondary Containment; Year Installed; and Predicted Flow Direction of Potential Release.

WFU stores oil in the following equipment with capacities of 55 gallons or more: 51 electrical transformers (owned by the university), a trash compactor, a stage lift, and 27 hydraulic elevators. Tables 2, 3 and 4

contain relevant information about this equipment, including: Campus Location; Oil Storage Capacity (gallons); and Predicted Flow Direction of Potential Release.

A 10,000-gallon UST containing gasoline for vehicle fueling is located at Fleet Services. Because this UST is subject to the federal UST regulations at 40 C.F.R. Part 280 (and as delegated to North Carolina and implemented at 15A NCAC Subchapters 2N, 2O and 2P), it is not subject to the Oil SPCC regulations, and is not covered by this plan. However, to provide a more complete inventory of oil storage facilities, some information on the tank is provided in this plan. The Fleet Services UST was installed in 1994 and is constructed of double-walled fiberglass reinforced plastic with double-walled piping. The tank is equipped with a catchment basin and electronic interstitial space and high level monitoring through a Veeder Root TLS-350 system.

One 10,000 gallon heating oil UST is owned and operated by Wake Forest University at UCC. This UST contains fuel oil used by boilers that heat the premises. Tanks storing heating oil for consumptive use on the premises where stored are not subject to the Federal (Code of Federal Regulations, Title 40, Part 280) and State (North Carolina Administration Code, Subchapter 2N, Sections .0100 to .0900) criteria and standards applicable to underground storage tanks, as administered by the North Carolina Department of Environment and Natural Resources. USTs not subject to the technical requirements of the underground storage tank regulations are subject to SPCC Plan requirements. This tank will, therefore, be addressed by the SPCC Plan.

Pepsi owns and operates two-diesel fuel USTs and day tanks located at UCC. Since these units are not under the control of Wake Forest University, they are not considered part of that facility with respect to this SPCC Plan. Further, the day tanks are not subject to Oil Spill Regulations as they have a capacity less than 55 gallons. Therefore, the Pepsi USTs and day tanks will not be addressed by this SPCC Plan. In the event of a release from the Pepsi USTs or day tanks, Wake Forest personnel will attempt to contain the release, using properly trained employees, while immediately notifying Pepsi.

Other oil containing devices located at WFU that are not included in this Plan include several grease interceptors. Because these are flow-through wastewater treatment units, they do not fall under Oil SPCC planning rules.

The trash compactor hydraulic system at UCC has a maximum capacity of 25 gallons of hydraulic fluid. Based on storage capacity, this container is exempt from SPCC requirements. The UCC grease traps are also exempt from SPCC requirements, based on the specific exemption for wastewater treatment units.

WFU does not store any oil products in 55-gallon drums.

3.4.1.3 Bulk Storage Tanks and Containers

The following subsections provide details on the ASTs and USTs located at Reynolda Campus and BB&T Field. Potential oil release pathways and additional AST and UST details are provided in Table 1. The rate of flow of a potential spill from any of the tanks or containers would depend on several factors (e.g., the size of the leak and liquid head above the leak) and is difficult to determine accurately until all factors associated with a specific spill are known. Because all WFU aboveground bulk storage containers are

provided with secondary containment, a release from the containers would remain within the secondary containment. However, Table 1 does provide potential oil release pathways in the event of secondary containment failure. The maximum potential spill volumes for the aboveground tanks are equivalent to their capacities (i.e., the maximum spill quantity for a 275-gallon AST is 275 gallons). However, if an incident occurs during tank filling, the potential volume of the release is equal to the capacity of the delivery or pick up vehicle.

3.4.1.4 Reynolda Campus USTs and ASTs

Tank # 1

Tank # 1 is a 15,000-gallon double-walled steel AST located outside the Utilities Operations Center (UOC). The tank was installed in 2009 and contains No. 2 fuel oil which is used as back-up fuel for the UOC boilers. The tank is supported by a steel saddle and is equipped with a product level gauge, interstitial leak detection, and an audible overfill alarm. The alarm is set to sound when the tank is 85% full and to shut off the pump at 90% full. The secondary containment drain valve is maintained in a closed position. Tank # 1 is filled via a remote fill port located within a spill box and situated over a small concrete containment area. There is a gauge at the fill port to monitor the amount of oil pumped into the AST. The fill piping to the tank and the fuel and return lines from the tank to the boilers are constructed of single-walled black steel piping. All piping is aboveground and is properly supported. The fuel from the AST is rarely used as it is only the back-up fuel for the boilers. If the piping leaked at a time when the boilers were not running on oil, only the oil in the piping at the time would be released. The tank and the piping are protected from vehicular traffic by concrete-filled pipe bollards.

Tank # 2

Tank # 2 is a 1,000-gallon double-walled AST located outside Benson University Center. The tank was installed in 2009 and contains diesel for the emergency generator located in Benson. Tank # 2 is situated on a steel saddle within a concrete containment area. The tank is equipped with a product level gauge and an audible overfill alarm. The secondary containment drain valve is maintained in a closed position. The tank is equipped with a port to allow inspections of the tank's interstitial space. The tank's fill port is located on top of the tank within a catchment basin. The piping associated with the AST is constructed of single-walled iron. The aboveground portion of the piping is properly supported. The underground piping is protected from corrosion and damage by a hardened foam coating. The fuel from the AST is rarely used as the generator only operates during monthly checks and during infrequent emergency situations. If the piping leaked at a time when the generator was not running on oil, only the oil in the piping at the time would be released. The tank is protected from vehicular traffic by concrete-filled pipe bollards.

Tank # 3

Tank # 3, located at the Worrell Chiller Plant, is a 10,000-gallon double-walled fiberglass reinforced plastic UST installed in 1992. Tank # 3 contains No. 2 fuel oil as a back-up fuel for the Worrell boilers and a primary fuel for the emergency generator located outside the plant. The UST is equipped with a Veeder Root TLS-3000 electronic monitoring system for its interstitial space and product level. The tank has an audible overfill alarm outside near the fill port. The piping associated with the UST is constructed of single-walled steel. The underground portion of the piping appears to be protected with a plastic wrap. The piping enters the boiler room at floor level, is directed to a pump, and then to the boilers. The piping in the boiler

room runs within a recessed trench that has drains. The piping also runs underground from the UST to the generator. The fuel from the UST is rarely used as it is only the back-up fuel for the boilers and the generator only operates during monthly checks and in infrequent emergency situations. If the piping leaked at a time when the boilers/generator were not running on oil, only the oil in the piping at the time would be released.

Tank # 4

Tank # 4, located inside the Fleet Services garage, is a 225-gallon double-walled steel AST containing motor oil. The tank is equipped with a product level gauge and was installed in 2008. Product is dispensed from the AST by a pump mounted to the top of the tank. There is no piping associated with Tank # 4. The tank is located in a storage room, removed from potential traffic hazards.

Tank # 5

Tank # 5, located outside the Fleet Services garage, is a 550-gallon steel AST within a fully-enclosed steel containment shell. The tank was installed in 1990 and contains diesel. The tank is equipped with a high level vent whistle and an access port to check for leaks within the containment structure. Because the AST does not have a product level gauge, the product level is manually checked prior to receiving deliveries. Single-walled iron piping runs from the AST to the dispensing pump. The fill port is located on the tank, within a catchment basin. The AST is protected from vehicular traffic by concrete-filled pipe bollards.

Tank # 6

Tank # 6 is a 500-gallon double-walled steel AST located outside the Fleet Services garage. The tank was installed in 2008 and contains used oil. The tank is equipped with a product level gauge, a high level vent whistle, and an access port to check the interstitial space. The AST is filled via PVC piping that runs from within the garage to the AST located outside. A pump in the garage is used to transfer used oil to Tank # 6. The fill port is located on the tank, within a catchment basin. The AST is protected from vehicular traffic by concrete-filled pipe bollards.

Tank # 7

Tank # 7 is a 250-gallon double-walled steel AST located outside the Athletics maintenance facility. The tank was installed in 2008 and contains used oil. The tank is equipped with an access port to check the interstitial space. The tank is equipped with a product level gauge for overfill protection. Only small volumes of used oil are transferred into the tank. The tank is protected from vehicular traffic by concrete-filled pipe bollards.

Tank # 8

Tank # 8 is a 750-gallon double-walled steel, integrally-mounted emergency generator tank containing diesel. The AST is located outside UOC, and according to WFU staff was installed in 1990. The AST is equipped with a product level gauge and its fill port is mounted directly on the tank. There is no piping associated with Tank # 8.

Tank # 9

Tank # 9 is a 500-gallon double-walled steel, integrally-mounted emergency generator tank containing diesel. The AST is located outside Alumni Hall, and according to WFU staff was installed in 1995. The AST is equipped with a product level gauge and its fill port is mounted directly on the tank. There is no

piping associated with Tank # 9. The tank is protected from vehicular traffic by concrete-filled pipe bollards.

Tank # 10

Tank # 10 is a 300-gallon double-walled steel, integrally-mounted emergency generator tank containing diesel. The AST was installed in 1992 and is located in a metal shed outside Winston Hall. The AST is equipped with a product level gauge and its fill port is mounted directly on the tank. There is no piping associated with Tank # 10.

Tank # 11

Tank # 11 is a 225-gallon double-walled steel, integrally-mounted emergency generator tank containing diesel. The AST was installed in 1997 and is located in a partially open utility pit at the basement level of Reynolds Library. The open overhead portion of the pit is covered with a metal grate. The AST is equipped with a product level gauge. The AST's remote fill port is located at ground level, above the tank at the grate. The fill piping is constructed of single-walled steel.

Tank # 12

Tank # 12 is a 380-gallon double-walled steel, integrally-mounted emergency generator tank containing diesel. According to WFU staff, the AST was installed in 1990 and is located outside Calloway Center in a secured area. The AST is equipped with a product level gauge and its fill port is mounted directly on the tank. There is no piping associated with Tank # 12.

Tank # 13

Tank # 13 is a 300-gallon double-walled steel, integrally-mounted emergency generator tank containing diesel. According to WFU staff, the AST was installed in 1982. It is located outside Reynolda Hall in a walled area of the loading dock, accessible through a gate. The AST is equipped with a product level gauge and its fill port is mounted directly on the tank. There is no piping associated with Tank # 13.

Tank #20

Tank #20 is a 1,072-gallon double-walled steel, integrally-mounted emergency generator tank containing diesel. The AST is located at the North Chiller Plant, and was installed in 2012. The AST is equipped with a product level gauge and its fill port is mounted directly on the tank. There is no piping associated with Tank # 20. The tank is protected from vehicular traffic by concrete-filled pipe bollards.

Tank #21

Tank #21 is a 353-gallon double-walled steel tank containing used cooking oil. The AST is located at the loading dock of the New Dining Hall, and was installed in 2014. The AST is equipped with a product level gauge and its fill port is mounted directly on the tank. The piping associated with the AST is constructed of single-walled iron. The aboveground portion of the piping is properly supported.

3.4.1.5 BB&T Field ASTs

Tank # 17

Tank # 17 is a 1,244-gallon double-walled steel, integrally-mounted emergency generator tank containing diesel. The AST is located outside the northwest corner of the stadium, and was installed in 2008. The

AST is equipped with a product level gauge and its fill port is mounted directly on the tank. There is no piping associated with Tank # 17. The tank is protected from vehicular traffic by concrete-filled pipe bollards.

Tank # 18

Tank # 18 is an 800-gallon double-walled steel, integrally-mounted emergency generator tank containing diesel. The AST is located outside the northwest corner of the stadium, and was installed in 1997. The AST is equipped with a product level gauge and its fill port is mounted directly on the tank. There is no piping associated with Tank # 18. The tank is protected from vehicular traffic by concrete-filled pipe bollards.

Tank # 19

Tank # 19 is an 80-gallon double-walled steel, integrally-mounted emergency generator tank containing diesel. The AST is located outside the northwest corner of the stadium, and was installed in 2009. The AST is equipped with a product level gauge and its fill port is mounted directly on the tank. There is no piping associated with Tank # 19. The tank is protected from vehicular traffic by concrete-filled pipe bollards.

3.4.1.6 UCC AST's and UST

Tank # 1-UCC

Tank #1-UCC is a Kohler 895-gallon UL designed, steel, double-walled tanks, installed with a five-gallon overfill spill containment bucket. The AST is located on a concrete pad west of the UCC building in a grassy area near the boiler plant. It is not located near vehicular traffic. There is no piping associated with Tank # 1-UCC. For the Kohler emergency generator tank, the requirement for automatic flow shutoff will be met provided fuel is transferred with a dispensing nozzle that has an automatic shut-off. A dispensing nozzle with an automatic shut-off will terminate product flow when liquid in the tank reaches a height that covers a hole in the dispensing nozzle sensing port. Based on tank filling procedures, both facility and delivery personnel will be present to immediately halt fuel transfer if the high level alarm sounds. Both tank systems, therefore, provide adequate containment.

Tank # 2-UCC

Tank #2-UCC is a MTU 2000-gallon UL designed, steel, double-walled tanks, installed with a five-gallon overfill spill containment bucket. The AST is located on a concrete pad west of the UCC building in a grassy area near the boiler plant. It is not located near vehicular traffic. There is no piping associated with Tank # 2-UCC. The MTU emergency generator tank has an automatic flow shutoff device.

Tank # 3-UCC

Tank # 3-UCC is a single wall 15,000-gallon fiberglass reinforced plastic UST installed in 1986. Tank # 3-UCC contains No. 2 fuel oil as a back-up fuel for the UCC boilers. The UST is equipped with a Veeder Root TLS-3000 electronic monitoring system for product level. The tank has an audible overfill alarm outside near the fill port. The piping associated with the UST is constructed of single-walled steel. The underground portion of the piping appears to be protected with a plastic wrap. The piping enters the boiler

room at floor level, is directed to a pump, and then to the boilers. The piping in the boiler room runs within a recessed trench that has drains. The fuel from the UST is rarely used as it is only the back-up fuel for the boilers and the generator only operates during monthly checks and in infrequent emergency situations. If the piping leaked at a time when the boilers/generator were not running on oil, only the oil in the piping at the time would be released.

3.4.1.7 Oil-Filled Operational Equipment

There are any number of potential release scenarios related to the oil-filled operational equipment. The worst case, although extremely unlikely, release scenario would be oil reservoir failure, resulting in complete loss of contents. In this case, the release would be almost instantaneous. The rate of flow for a potential oil release would also be highly variable, being dependent upon the specific circumstances and physical conditions of the equipment location. Again, if we assume a worst case scenario, the entire oil storage contents of the equipment could be released, and if a floor drain or storm drain is in the vicinity, could be released to water. WFU has taken steps to prevent oil releases from equipment, including routine inspections and, where applicable, protection from vehicular traffic with concrete-filled pipe bollards.

3.4.1.7.1 Hydraulic Elevators

Twenty seven (27) hydraulic elevators are located at WFU. The elevator oil reservoir capacities range from 80 to 225 gallons. In most cases, the buildings provide secondary containment for the hydraulic reservoirs, as most are located in rooms without floor drains. Because some elevators have oil reservoirs that cannot meet the general secondary containment requirements, WFU is complying with the qualified oil-filled operational equipment requirements of 40 C.F.R. § 112.7(k).

Elevator locations, oil storage capacities, and potential oil release pathways are provided in Table 2.

3.4.1.7.2 Other Hydraulic Equipment

In addition to the hydraulic elevators, WFU has two other pieces of hydraulic equipment with oil storage capacities of 55 gallons or more. Scales Fine Arts Center is equipped with a stage equipment lift whose hydraulic reservoir contains 200 gallons of oil. There is also a trash compactor in the Facilities Coal Yard that has a 76-gallon oil reservoir. Both pieces of equipment meet the general secondary containment requirements. For inspection purposes, the stage lift is included with the hydraulic elevator inspection and the compactor is included with tanks.

Equipment locations, oil storage capacities, and potential oil release pathways are provided in Table 3.

3.4.1.7.3 Electrical Transformers

WFU owns and operates 49 oil-filled electrical transformers on the campus property and five at BB&T Field and two at University Corporate Center. The transformers are all located outdoors, and their oil storage capacities range from 61 to 574 gallons. None of the transformers contain PCBs. Because some transformers that cannot meet the general secondary containment requirements (i.e., they are located near

storm drains or surface water bodies), WFU is complying with the qualified oil-filled operational equipment requirements of 40 C.F.R. § 112.7(k).

Transformer locations, oil storage capacities, and potential oil release pathways are provided in Table 4.

3.4.1.8 Tank Piping

The piping associated with the WFU tanks is constructed of single-walled steel (black iron). According to information provided by WFU, the underground piping associated with Tank # 2 is protected from corrosion and damage by a hardened foam coating. While most of the piping is not provided with secondary containment, the circumstances of the tank systems' use create a very limited potential for an oil release from the piping. Most of the tank systems are utilized only for emergency or back up purposes. In the event of piping failure when the systems are not in use, only the oil in the piping at the time would be released, because the piping exits the top of the tanks, and there would be no draw from the pumps. The maximum amount of oil released in this scenario would vary with the particular tank system, but the maximum would be approximately 25 gallons. If the piping from the UOC AST, the Worrell UST or UCC UST were to rupture when the boilers/generators were running on oil, then approximately 25 additional gallons of oil would be released prior to discovery of and response to the leak. This estimate is based on a maximum flow rate of 6 gallons per minute and an expected operator response time of one to three minutes. The response time for an oil release from the Benson AST piping may be longer, but because the generator draws oil at a slower rate, the maximum amount of oil released prior to discovery is likely to be less than 40 gallons. Table 1 describes where potential releases from piping would likely flow.

The pipe supports for aboveground runs were designed in accordance with good engineering practices. Aboveground piping is also protected from vehicular traffic by barriers. Tank piping is shown on the Facility Diagrams in Annex 1.

3.4.1.9 Transfer Areas

The oil transfer areas (i.e., the UST and AST fill ports) at WFU are maintained and operated to prevent potential releases from entering drains or surface water. Specifically, oil transfers are monitored (see Section 3.6, below) and countermeasures are immediately taken if a release is imminent or occurring. The most likely oil release scenarios would be a tank overfill or a ruptured hose. The pathway for a potential release in transfer areas is described in Table 1. The potential amount of oil that could be released would be dependent on the particular circumstances; however some generalizations can be made. According to WFU staff, the off-loading rate of delivery vehicles would vary based upon the particular pump used and the gravity feed rate to the tanks. The maximum oil delivery rate would be approximately 25 gallons per minute. It is estimated that the driver and/or WFU staff overseeing the delivery would respond by shutting off the flow from the delivery vehicle within 10 seconds. Therefore, it is expected that less than five gallons of oil would be released during a transfer incident.

WFU does not have any oil loading/unloading racks and is therefore not subject to the requirements 40 C.F.R. § 112.7(h).

3.4.1.9.1 Oil Transfer Procedures

Tank truck unloading on campus consists of bulk deliveries of No. 2 fuel oil, gasoline, and diesel to the ASTs and USTs. Oil transfers also occur when used oil and waste cooking oil are removed from campus by vendors. WFU staff and the carrier monitor all deliveries and employ practices for preventing transfer spills and accidental discharges.

The following general procedures and practices are followed by WFU personnel and vendors with respect to AST and UST oil transfer procedures:

- i. Oil transfer operations are attended by WFU staff. The driver, operator, or attendant of any delivery vehicle does not leave the area while the oil is being transferred.
- ii. Oil transfers are usually performed during daylight hours. If transfers must be performed at night, they are performed only under suitable lighting conditions.
- iii. Oil deliveries are performed only at designated fill pipe/port areas.
- iv. Nearby stormwater catch basins are protected by absorbent boom or spill mats.
- v. Prior to the transfer, the carrier determines that the receiving tank has available capacity to receive the volume of oil to be delivered/removed by using the tank's level gauge or manually checking the tank.
- vi. The carrier inspects drains and outlets prior to filling and departure of trucks.
- vii. WFU personnel or the carrier monitor every aspect of the delivery and take immediate action to stop the flow of oil if the working capacity of the tank has been reached or if an equipment failure or related emergency occurs.
- viii. Smoking, lighting matches, or carrying any flame near the truck during transfer operations is not permitted.
- ix. Cell phones must be turned off.
- x. The delivery/removal truck wheels are to be chocked if the vehicle is on an incline to avoid the possibility of truck movement prior to the completion of oil transfer.
- xi. Drip pans and/or absorbent material are available on campus in the event of a leak or overfill.
- xii. Open spring loaded valves are never tied off or blocked.
- xiii. Prior to filling and prior to departure of the truck, any vehicle outlets are closed and inspected for evidence of leakage to prevent leakage of liquid while in transit.

40 C.F.R. § 112.7(h); Best Management Practice

Table 1 Bulk Oil Storage Tanks and Containers

Tank Identification Number	Location	Total Storage Capacity (gallons)	Contents	Material Construction of	Means Secondary Containment of	Year Installed	Predicted Flow Direction of Potential Release
1	Utilities Operations Center	15,000	No. 2 Fuel Oil	Double-walled steel tank	Double-walled tank	2009	A release during tank filling, due to secondary containment failure, or from outdoor piping would potentially flow over the gravel area surrounding the fill port and seep into the ground. A release from piping in the boiler room would potentially flow to floor drains located throughout the facility.
				Single-walled steel piping	None		
2	Benson University Center	1,000	Diesel	Double-walled steel tank	Double-walled tank and concrete containment area under tank	2009	If it overflowed the containment under the tank, a release during tank filling, due to secondary containment failure, or from outdoor piping would flow over the grassy area surrounding the tank and seep into the ground, potentially reaching a catch basin in the paved area beyond. A release from piping in the generator room would be contained within the building as no floor drains are located in the room.
				Single-walled steel piping	None - no floor drains in generator room		

Tank Identification Number	Location	Total Storage Capacity (gallons)	Contents	Material Construction of	Means Secondary Containment of	Year Installed	Predicted Flow Direction of Potential Release
3	Worrell Chiller Plant (UST)	10,000	No. 2 Fuel Oil	Double-walled fiberglass reinforced plastic tank	Double-walled tank	1992	A release during tank filling would flow over the grassy area surrounding the fill port and seep into the ground. A release from piping in the boiler room would potentially flow to floor drains located throughout the facility. A release from the piping as it connects to the outdoor generator would flow over the surrounding crushed stone and to a catch basin approx. 10 feet away.
				Single-walled steel piping	The underground portion of the piping is in a protective wrap. Neither the aboveground or underground piping has secondary containment.		
4	Fleet Services	225	Motor Oil	Double-walled steel tank	Double-walled tank	2008	A release during tank filling or due to secondary containment failure would potentially flow floor drains in the garage.
				No piping	NA		
5	Fleet Services	550	Diesel	Single-walled steel tank	Fully-enclosed steel containment structure	1990	A release during tank filling or due to secondary containment failure would potentially flow across the paved area to a catch basin approx. 50 feet away.
				Single-walled steel piping	None		
6	Fleet Services	500	Used Oil	Double-walled steel tank	Double-walled tank	2008	A release during tank filling or due to secondary containment

Tank Identification Number	Location	Total Storage Capacity (gallons)	Contents	Material Construction of	Means Secondary Containment of	Year Installed	Predicted Flow Direction of Potential Release
				Single-walled PVC piping	None		failure would potentially flow across the paved area to a catch basin approx. 100 feet away.
7	Athletics	500	Used Oil	Double-walled steel tank	Double-walled tank	2008	A release during tank filling or due to secondary containment failure would potentially flow across the paved area to a catch basin approx. 100 feet away.
				No piping	NA		
8	Utilities Operations Center	750 (generator)	Diesel	Double-walled steel tank	Double-walled tank	1990	A release during tank filling or due to secondary containment failure would flow across the surrounding crushed stone.
				No piping	NA		
9	Alumni Hall	500 (generator)	Diesel	Double-walled steel tank	Double-walled tank	1995	A release during tank filling or due to secondary containment failure would potentially flow across the paved area to a catch basin approx. 50 feet away.
				No piping	NA		
10	Winston Hall	300 (generator)	Diesel	Double-walled steel tank	Double-walled tank	1992	A release during tank filling or due to secondary containment failure would flow across the concrete pad within the shed and onto the crushed stone surrounding the shed.
				No piping	NA		
11	Reynolds Library	225 (generator)	Diesel	Double-walled steel tank	Double-walled tank	1997	A release during tank filling would flow into the pit below

Tank Identification Number	Location	Total Storage Capacity (gallons)	Contents	Material Construction of	Means Secondary Containment of	Year Installed	Predicted Flow Direction of Potential Release
				Single-walled steel fill piping	None		containing the AST and potentially to the nearby storm drain. A release due to secondary containment failure would potentially flow to that same storm drain approx. 15 feet from the AST.
12	Calloway	380 (generator)	Diesel	Double-walled steel tank	Double-walled tank	1990	A release during tank filling or due to secondary containment failure would potentially flow across the surrounding concrete and into the adjacent pit to a catch basin approx. 12 feet away.
				No piping	NA		
13	Reynolda Hall	300 (generator)	Diesel	Double-walled steel tank	Double-walled tank	1982	A release during tank filling or due to secondary containment failure would flow over the surrounding soil. A release would be contained on 3 sides by a brick wall, but could potentially flow out the one open side to the loading dock and to a catch basin approx. 20 feet away.
				No piping	NA		
17	BB&T Field	1,244 (generator)	Diesel	Double-walled steel tank	Double-walled tank	2008	A release during tank filling or due to secondary containment

Tank Identification Number	Location	Total Storage Capacity (gallons)	Contents	Material Construction of	Means Secondary Containment of	Year Installed	Predicted Flow Direction of Potential Release
				No piping	NA		failure would potentially flow down slope across the paved area to a catch basin approx. 60 feet away.
18	BB&T Field	800 (generator)	Diesel	Double-walled steel tank	Double-walled tank	1997	A release during tank filling or due to secondary containment failure would potentially flow down slope across the paved area to a catch basin approx. 15 feet away.
				No piping	NA		
19	BB&T Field	80 (generator)	Diesel	Double-walled steel tank	Double-walled tank	2010	A release during tank filling or due to secondary containment failure would potentially flow into surrounding gravel and grass.
				No piping	NA		
20	North Chiller	1072 (generator)	Diesel	Double-walled steel tank	Double-walled tank	2012	A release during tank filling or due to secondary containment failure would potentially flow into surrounding gravel and grass.
				No piping	NA		
21	DiningHall	353 (cooking oil)	Cooking Oil	Double-walled steel tank	Double-walled tank	2014	A release during tank filling or due to secondary containment failure would potentially flow to the base of the loading dock.
				Single-walled steel fill piping	NA		

Tank Identification Number	Location	Total Storage Capacity (gallons)	Contents	Material Construction of	Means of Secondary Containment	Year Installed	Predicted Flow Direction of Potential Release
1-UCC Kohler	University Corporate Center	895	Diesel	Double-walled steel tank	Double-walled tank and concrete containment area under tank	2009	A release during tank filling, due to secondary containment failure would flow over the concrete pad into the grass and seep into the ground.
				No piping	No piping		
2-UCC MTU	University Corporate Center	2000	Diesel	Double-walled steel tank	Double-walled tank and concrete containment area under tank	2009	A release during tank filling, due to secondary containment failure would flow over the concrete pad into the grass and seep into the ground.
				No piping	No piping		
3-UCC	University Corporate Center (UST)	15,000	No. 2 Fuel Oil	Single-walled fiberglass reinforced plastic tank	Double-walled tank	1986	A release during tank filling would flow over the grassy area surrounding the fill port and seep into the ground. A release from piping in the boiler room would potentially flow to floor drains.
				Single-walled steel piping	The underground portion of the piping is in a protective wrap. Neither the aboveground or underground piping has secondary containment.		

Table 2 Hydraulic Elevators

Campus Location	Oil Storage Capacity (gal)	Predicted Flow Direction of Potential Release
Olin	150	Release would fill room and flow into adjacent room.
Benson – Lobby Side	150	Release would fill room and flow into adjacent hallway.
Benson – Food Court	150	Release would fill room and flow into adjacent hallway.
Tribble-B Wing	190	Release would fill room and flow into adjacent hallway.
Tribble-C Wing	190	Release would fill room and flow into adjacent hallway.
Collins Residence	80	Release would fill room and flow towards floor drain approx. 5 feet away in adjacent mechanical room.
Winston Hall – B08	110	Release would fill room and flow towards floor drain approx. 12 feet away in adjacent hallway.
Reynolds Library – Wilson Wing	150	Release would fill room and flow into adjacent room.
Reynolds Library – Reynolds Wing	200	Release would fill room and flow into adjacent hallway.
Calloway – Kirby Side	80	Release would fill room and flow towards floor drain approx. 15 feet away in adjacent room.
Calloway – Manchester Side	190	Release would fill room and flow into adjacent hallway.
Athletic Center	150	Release would fill room and flow into adjacent weight room.
Miller Center	140	Release would fill room and flow into adjacent hallway.
Polo Residence - A	150	Release would fill room and flow towards floor drain approx. 6 feet away in mechanical room.
Polo Residence- B	150	Release would fill room and flow towards floor drain approx. 6 feet away in mechanical room.
Zeno Martin Residence	150	Release would fill room and flow into adjacent hallway.
Worrell – 1	150	Release would fill room and flow towards floor drain just outside door in adjacent mechanical room.
Worrell – 2 Law Side	150	Release would fill room and flow towards floor drain just outside door in adjacent mechanical room.
Worrell – 3 Library Side	150	Release would fill room and flow towards floor drain approx. 20 feet away in adjacent mechanical room.

Campus Location	Oil Storage Capacity (gal)	Predicted Flow Direction of Potential Release
Alumni Hall	80	Release would fill room and flow into adjacent hallway.
Scales Fine Arts Center – Music Wing	200	Release would remain within the building. The nearby floor drain has been sealed.
Scales Fine Arts Center – Art Wing	225	Release would fill room and flow into adjacent hallway.
Greene	150	Release would fill room and flow into adjacent hallway.
South Residence Hall - 1	80	Release would fill room and flow into adjacent storage room.
South Residence Hall - 2	80	Release would fill room and flow into adjacent storage room.
Welcome Center	80	Release would fill room and flow into adjacent storage room.
Bridger Field House	150	Release would fill room and flow into adjacent storage room.

Table 3 Miscellaneous Hydraulic Equipment

Campus Location	Oil Storage Capacity (gal)	Equipment	Predicted Flow Direction of Potential Release
Scales Fine Arts Center	200	Stage equipment lift	Release would fill room and flow into adjacent room.
Facilities Coal Yard	76	Trash compactor	Release would flow across surrounding soil.

Table 4 Oil-Filled Electrical Transformers

Transformer No.	Campus Location	Oil Storage Capacity (gal)	Predicted Flow Direction of Potential Release
T1	Utilities Operations Center	266	Release would flow to adjacent gravel parking area.
T2	Facilities coal yard	219	Release would flow to adjacent gravel parking area.
T3	Anthropology Lab	169	Release would flow to surrounding soil and down an adjacent slope to a catch basin approx. 60 feet away.
T4	Miller Center	407	Release would flow to surrounding grassy area and down slope to a catch basin approx. 25 feet away.
T5	WFDD	165	Release would flow to surrounding grassy area.
T6	Spry Soccer Stadium	345	Release would flow to surrounding grassy area and down slope to a wooded area.
T7	Kentner Stadium	190	Release would flow down a grassy slope to a catch basin approx. 25 feet away.
T8	Olin	302	Release would flow to surrounding soil and pavement.
T9	West Chiller	450	Release would flow to surrounding grassy area.
T10	USB (Formerly IS)	371	Release would flow to surrounding pavement.
T11	Worrell	574	Release would flow over surrounding crushed stone to a catch basin approx. 10 feet away.
T12	Polo Residence	367	Release would flow over surrounding crushed stone.
T13	F&CS by construction shop	165	Release would flow over surrounding paved area to a catch basin approx. 5 feet away.
T14	Bookstore Warehouse	189	Release would flow over surrounding paved area and down slope to a catch basin approx. 50 feet away.
T15	EHS Bldg	169	Release would flow over surrounding paved area to a catch basin approx. 8 feet away.

Transformer No.	Campus Location	Oil Storage Capacity (gal)	Predicted Flow Direction of Potential Release
T16	Landscaping	61	Release would flow over surrounding paved area to a catch basin approx. 6 feet away.
T17	Zeno Martin	227	Release would flow over surrounding grassy area.
T18	Facilities	169	Release would flow over surrounding crushed stone.
T19	ROTC	60	Release would flow over surrounding grassy area.
T20	Student Apts A	109	Release would flow down grassy slope towards the building.
T21	Student Apts B	109	Release would flow down grassy slope towards the building.
T22	Greene Hall	398	Release would flow over surrounding concrete to a catch basin approx. 1 foot away.
T23	Calloway	399	Release would flow over surrounding concrete to a catch basin approx. 1 foot away.
T24	North Chiller Plant (A)	400	Release would flow over surrounding grassy area.
T25	Athletic Center (A)	175	Release would flow over surrounding grassy area.
T26	Athletic Center (B)	165	Release would flow over surrounding grassy area.
T27	Athletic Center (C)	266	Release would flow over surrounding paved area to a catch basin approx. 15 feet away.
T28	Scales Fine Arts (A)	314	Release would flow over surrounding grassy area and down slope to a creek approx. 20 feet away.
T29	Scales Fine Arts (B)	390	Release would flow over surrounding grassy area and down slope to a creek approx. 20 feet away.
T30	Golf Center	61	Release would flow over surrounding grassy area.
T31	South Chiller Plant	455	Release would flow over surrounding crushed stone.

Transformer No.	Campus Location	Oil Storage Capacity (gal)	Predicted Flow Direction of Potential Release
T32	South Chiller Plant	511	Release would flow over surrounding crushed stone.
T33	South Residence Hall	175	Release would flow over surrounding grassy area.
T40	Welcome Center	266	Release would flow into surrounding grassy area.
T41	Palmer / Piccolo	266	Release would flow into surrounding grassy area.
T42	The SS Center	61	Release would flow over surrounding grassy area.
T43	Farrell Hall	390	Release would flow over surrounding grassy area.
T44	Dogwood Hall	245	Release would flow into surrounding grassy area.
T45	Magnolia Hall	245	Release would flow into surrounding grassy area.
T46	North Chiller Plant (B)	400	Release would flow over surrounding grassy area.
T47	New Dining Hall	223	Release would flow into surrounding grassy area.
T48	Arnold Palmer Golf Center	126	Release would flow onto asphalt
T49	Maya Angelou Hall	472	Release would flow over surrounding grassy area.
T34 and T35	BB&T – inside (A) and (B)	(2) x 100 = 200	Release would be contained within the recessed room.
T36	BB&T – by generators	370	Release would flow over surrounding paved area to a catch basin approx. 60 feet away.
T37 and T38	BB&T – Hillside (2)	(2) x 549 = 1098	Release would flow over surrounding grassy area.
T39	BB&T Scoreboard side	175	Release would flow over surrounding grassy area.

Transformer No.	Campus Location	Oil Storage Capacity (gal)	Predicted Flow Direction of Potential Release
UCC T1	University Corporate Center	472	Earthen floor is likely sufficiently impervious to contain oil until cleanup occurs, without allowing a discharge to navigable waters or shorelines.
UCC T2	University Corporate Center	472	Earthen floor is likely sufficiently impervious to contain oil until cleanup occurs, without allowing a discharge to navigable waters or shorelines.

3.4.2 Reynolda Campus – Chemical Waste Generation, Collection and Storage

Several departments on the Reynolda Campus generate hazardous waste on a routine basis. These departments and the type of waste generated are:

Department	Waste	GHS Hazard
Chemistry	Organic Solvents	Flammable, Toxic
	Acidic Liquids	Corrosive
	Research Solids	Toxic
	Silica from Columns	Flammable Solid
	Activated Carbon	Flammable Solid
Biology	Alcohols	Flammable
	Research Solids	Toxic
	Ethidium bromide solids	Toxic
Physics	Organic Solvents	Flammable, Toxic
	Acidic Liquids	Corrosive
	Liquids with Heavy Metals	Toxic
Art Studios	Paint Debris - tubes, brushes	Toxic
	Aerosol Cans	Flammable
Facilities and Campus Services	Oil and Absorbent	Irritant
	Antifreeze	Irritant
	Aerosol Cans	Flammable
	Latex Paint	Irritant
	Oil based Paint	Flammable
	Mercury bulbs - Fluorescent	Toxic

In addition to these ongoing waste streams, there are any number of intermittent and one-time occurrences of waste generation. The majority of these are lab pack chemicals that can not be consolidated into existing waste profiles. Lab packs will often include chemicals that are hazardous for one or more of the following characteristics:

- Flammable, Corrosive
- Spontaneously Combustible
- Dangerous When Wet
- Oxidizers (including Organic Oxidizers)
- Toxic (including Poison by Inhalation hazards)

3.4.2.1 Satellite Waste Areas

As per 40 CFR 262.34, no more than 55-gallons of a single waste stream may be collected at any single point of generation. These satellite waste generation areas may be located in laboratories, art studios, and Facilities Team Shops.

3.4.2.2 Laboratories

Waste containers within laboratories do not exceed 20L (5 gallons). Generally, Organic Solvents and Acidic Liquids are collected in 20L carboys in labs where waste is generated. Some labs also have benchtop 4L collection containers with latching funnels to ensure containers are closed when not adding or removing waste. Solids are collected in either 1-gallon benchtop cans, or 5-gallon buckets with re-sealable lids. Waste is collected on a weekly basis, or more often if requested.

3.4.2.3 Art Studios

Paint Debris from art studios is collected in 55-gallon containers. Each studio is considered a satellite accumulation area. Once full, EHS is contacted by the Art Department to empty the waste. Occasionally, the Theater Department will purge old and unused non-hazardous latex paint. The department will call EHS for paint removal.

3.4.2.4 Facilities and Campus Services

Facilities and Campus Services operates an aerosol can puncture device at Fleet Maintenance. Residue from punctured cans is collected in an attached 55-gallon drum. Vapors are collected in a carbon absorption unit attached to the puncture unit. An antifreeze coolant drum is also located in Fleet Maintenance. Latex and Oil-based Paint to be discarded is collected by EHS when requested.

3.4.2.5 Hazardous Waste Storage Area

Compatible waste is consolidated into 55-gallon or 30-gallon containers at the Hazardous Waste Storage Buildings #57 and #58, located in the FC&S Coal Yard.

Each building is constructed to the following specifications:

- Four (4) hour bi-directional fire rated noncombustible weatherproof construction that meets or exceeds UL 263 & ASTM E-119
- Grating and Leak Proof Spill-Containment Sump Assembly is a 6" inch high assembly consisting of 1" inch deep welded steel floor grating over 6" inch deep leak proof secondary containment sump.
- GRAVITY AIR FLOW VENTS: UL listed with 3 hour rated fire dampers with UL listed 165 degree fusible links. Dampers include louvers and screens to provide airflow and have a galvanized steel frame and curtain type galvanized steel blades.
- Permanent D.O.T. metal flip placard with rust proof aluminum holder and stainless steel clips on each door. One (1) pressure sensitive NFPA 704 Hazard Rating sign on each door.
- Explosion Proof Fluorescent Light Fixtures

- Explosion Relief Panel - Building designed to resist a minimum internal pressure of 100 psf. Pressure-relief panel(s) located on the exterior wall and are designed to release at an internal pressure of 20 psf.
- Dry Chemical Fire Suppression 21Lb Tank
- Combination Shower/Eyewash Station
- FUME HOOD (3 DRUM CAPACITY) - Collects and exhausts harmful vapors and fumes when dispensing from 3 drums. Includes internal mounted explosion proof switch, and external mounted explosion proof fan.

The buildings are locked to prevent unauthorized access. Only individuals who are RCRA Hazardous Waste and OSHA 24 or 40 hour HAZWOPER trained are provided keys to the building, and only these individuals may consolidate or otherwise handle waste materials within the buildings.

Waste containers in the building are marked “Hazardous Waste” and with the date storage begins. Containers greater than 5 gallons will also be labeled with the appropriate DOT hazard label(s). The Reynolda Campus is currently a Large Quantity Generator of hazardous waste, and can not hold waste on site for more than 90 days without a permit.

3.4.3 Wake Downtown B60 – Chemical Waste Generation, Collection and Storage

All departments at Wake Downtown B60 generate hazardous waste on a routine basis. These departments and the type of waste generated are:

Department	Waste	GHS Hazard
Chemistry and Medicinal Chemistry	Organic Solvents	Flammable, Toxic
	Acidic Liquids	Corrosive
	Research Solids	Toxic
	Silica from Columns	Flammable Solid
	Activated Carbon	Flammable Solid
Biochemistry	Organic Solvent and Alcohol	Flammable
	Research Solids	Toxic
	Cyanide liquids	Toxic
Engineering	Organic Solvents	Flammable, Toxic
	Acidic Liquids	Corrosive
	Research Solids	Toxic

In addition to these ongoing waste streams, there may intermittent and one-time occurrences of waste generation. These will be Lab pack chemicals that are hazardous for one or more of the following characteristics:

- Flammable, Corrosive
- Spontaneously Combustible

- Dangerous When Wet
- Oxidizers (including Organic Oxidizers)
- Toxic (including Poison by Inhalation hazards)

3.4.3.1 Satellite Waste Areas - Laboratories

Waste containers within laboratories do not exceed 20L (5 gallons). Generally, Organic Solvents and Acidic Liquids are collected in 20L carboys in labs where waste is generated. Some labs also have benchtop 4L collection containers with latching funnels to ensure containers are closed when not adding or removing waste. Solids are collected in either 1-gallon benchtop cans, or 5-gallon buckets with re-sealable lids. Waste is collected on a weekly basis, or more often if requested.

3.4.3.2 Hazardous Waste Storage Area

Compatible waste is consolidated into 55-gallon or 30-gallon containers in the Chemical Storage Room, Room #0809.

The room is constructed to the following standards:

- Four (4) hour bi-directional fire rated noncombustible construction that meets or exceeds UL 263 & ASTM E-119
- Explosion Proof Fluorescent Light Fixtures
- Fire Suppression System
- Emergency Shower
- Eyewash Station
- FUME HOOD (2 DRUM CAPACITY) - Collects and exhausts harmful vapors and fumes when dispensing from 2 drums.

Waste containers in the room are marked “Hazardous Waste” and with the date storage begins. Containers greater than 5 gallons will also be labeled with the appropriate DOT hazard label(s). Wake Downtown is currently a Small Quantity Generator of hazardous waste, and can not hold waste on site for more than 180 days without a permit.

3.4.4 Nanotechnology – Chemical Waste Generation, Collection and Storage

Nanotechnology generates hazardous waste on a routine basis. The the types of waste generated are:

Department	Waste	GHS Hazard
Nanotechnology	Organic Solvents	Flammable, Toxic
	Acidic Liquids	Corrosive
	Research Solids	Toxic

3.4.4.1 Satellite Waste Areas - Laboratories

Generally, Organic Solvents and Acidic Liquids are collected in 20L carboys in labs where waste is generated. A 55-gallon drum for Organic Solvent waste is located in the clean room. Some labs also have benchtop 4L collection containers with latching funnels to ensure containers are closed when not adding or

removing waste. Solids are collected in either 1-gallon benchtop cans, or 5-gallon buckets with re-sealable lids. Waste is generated at a very slow rate at Nanotechnology. The 55-gallon drum of Organic Solvent is filled less than twice a year. Typically, a shipment of waste is done once every 6 to 9 months.

3.4.4.2 Hazardous Waste Storage Area

Because of the very slow rate of accumulation, it is rare that waste is stored in the generator storage area in Loading Dock Area, Room 109. The Nanotechnology Center meets the definition of Conditionally Exempt Small Quantity Generator, CESQG. This requires that Nanotechnology meet only the following regulations under 40 CFR 261.5:

- Identify waste generated to determine whether they are hazardous;
- Not accumulate more than 2,200 pounds of hazardous waste at any one time (or 2.2 pounds of an acute hazardous waste);
- Ensure that the waste is sent to either: 1) a permitted or interim status treatment, storage or disposal facility (TSDF); 2) a permitted municipal or industrial solid waste facility; 3) a recycling facility; or 4) treat or dispose of the waste on-site as long as it does not endanger the environment or human health.

Wake Forest University has decided to handle Nanotechnology waste by method 1, by sending the waste to a permitted treatment, storage or disposal facility.

3.4.5 Protection

3.4.5.1 Inspection, Testing, And Preventive Maintenance Procedures

WFU implements a comprehensive inspection, testing, and preventive maintenance program for its oil storage tanks, containment structures, and associated appurtenances and equipment. This chapter describes these procedures and WFU's record keeping practices in accordance with 40 C.F.R. § 112.7(e); and 40 C.F.R. § 112.8(c).

3.4.5.1.1 General Spill Prevention Strategy and Training

The primary method of spill management at WFU is spill prevention. This has been emphasized through the proper design of containment systems, personnel training, and regular inspections. All WFU personnel involved with the use, storage, or management of oil are trained to report oil releases immediately to ensure prompt corrective action. In addition, certain employees are trained to contain spills using appropriate methods and equipment (assuming containment can be completed without risk to human health) until emergency response personnel with specialized response training and equipment respond. In the event that visible leaks are detected, they are promptly stopped, and preventive maintenance is performed to ensure that the cause of the leak is addressed. If oil is released into a diked area surrounding a tank, the released oil is immediately removed and properly managed.

3.4.5.1.2 Bulk Oil Storage Tank Inspection and Testing

As required by 40 C.F.R. § 112.8(c)(6), WFU combines visual inspection with another testing technique for each tank and container that has an oil storage capacity of 55-gallons or greater.[†] The following sections outline the specific inspection and integrity testing procedures for all oil tanks and containers at WFU.

The program consists of:

- **Monthly Visual Inspections** of all bulk storage tanks performed by WFU personnel;
- **Annual Visual Inspections** of the shop-fabricated ASTs by designated WFU personnel;
- **Formal External Inspections and Leak Tests** of certain shop-fabricated ASTs performed, as needed, by a qualified tank inspector;
- **Tank Integrity Tests** performed, as needed, by a qualified tank tester; and
- **Regular Testing of Devices** to ensure that equipment remain in good working order.

If the results of an inspection or test indicate evidence of leakage or significant deterioration of a tank or container, or improper operation of associated devices, WFU will remove the tank, container or device from service and either repair or replace it.

The following sections provide the details of WFU's inspection and testing program.

3.4.5.1.3 Inspection and Testing of Shop-Fabricated ASTs

The elements of WFU's AST inspection and testing program for shop-fabricated ASTs were developed in accordance with the Steel Tank Institute's (STI's) "Standard for the Inspection of Aboveground Storage Tanks," SP001, 4th Edition (July 2006).

3.4.5.1.4 Monthly and Annual Visual Inspections

Designated WFU personnel perform monthly and annual visual inspections of all ASTs and containers (and associated piping) that have oil storage capacities equal to or greater than 55 gallons in accordance with the STI SP001 standard. Tank equipment (i.e., gauges, valves, leak detection systems, alarm/warning systems) is inspected for evidence of maintenance deficiencies and periodically tested to ensure that it remains in good working order.

Monthly and annual inspections are performed by designated personnel who have been trained to perform the inspections per the STI SP001 standard. The Monthly AST Checklist and STI SP001 Annual Inspection Inspections are completed on-line by mobile application using the Dakota Software EMS System.

3.4.5.1.5 Formal AST External Inspections and Leak Testing

WFU's shop-fabricated AST systems are potentially subject to formal external inspection and leak testing requirements (as defined by the STI SP001 standard) according to the capacity of the tank, the means of

[†] Oil-filled electrical and operating equipment are not considered bulk storage containers for these purposes, and are therefore not typically subject to the inspection and testing requirements. However, because WFU has committed to meeting the qualified oil-filled operational equipment requirements, routine inspections are required, and are described in this chapter. 40 C.F.R. § 112.7(k).

secondary containment, and the presence of a continuous release detection method.[‡] Because each WFU AST (other than Tank # 1) has less than 5,000 gallons of capacity, has secondary containment, and is provided a continuous release detection method through visual observations, formal external inspections and leak testing by a qualified tank inspector are not required on a routine basis per STI standards. However, because Tank # 1 has a capacity of 15,000 gallons, STI SP001 requires that it undergo a formal external inspection by a certified tank inspector when the tank reaches 20 years of service, which will be in 2029.

3.4.5.1.6 Tank Integrity Tests

WFU will retain the services of a qualified tank testing contractor to perform a tank integrity test in accordance with the STI Standard SP001, API Standard 653, or other industry standard determined by the tank tester to be appropriate for the type of tank, under the following circumstances:

- Whenever material repairs or alterations are made to the tank;
- If evidence of a leak is detected;
- In the event of damage to the tank or containment structure; or
- If the results of a formal tank inspection reveals evidence of leakage or deterioration.

An affected tank will remain out of service until it is repaired and tested to confirm its integrity or it is otherwise replaced.

3.4.5.1.7 Buried Piping Inspection and Testing

If a section of buried piping is exposed, it must be carefully inspected for deterioration. Corrective action must be taken if piping is damaged or significantly corroded. Integrity and leak testing will be conducted of any buried piping at the time of installation, modification, construction, relocation, or replacement. See 40 C.F.R. §§ 112.8(d)(1) and (4).

3.4.5.1.8 Regular Testing of Devices

In addition to the frequent visual inspections, WFU will perform regular testing of devices for all equipment associated with oil storage. For example, high level alarms and product level gauges will be periodically tested and/or inspected in accordance with the manufacturer's instructions to ensure they are in working order.

3.4.5.1.9 Oil-Filled Transformer Inspections

In accordance with 40 C.F.R. § 112.7(k)(2)(i), WFU staff inspect oil-filled electrical transformers on a monthly basis to ensure that the units are in good condition and not in danger of leaking. Inspections are completed on-line by mobile application using the Dakota Software EMS System. Inspection records are maintained in the EHS Office by the IPC Coordinator. Inspectors immediately notify the IPC Coordinator of any oil releases. If any problems or deficiencies are noted, they are either addressed by WFU staff or an appropriate vendor is immediately notified to conduct necessary inspections and/or repairs. Additional

[‡] A continuous release detection method is defined under STI as a means of detecting a release of liquid through inherent design. It can be passive, such as visual detection, but must be designed in accordance with good engineering practice.

informal inspections are conducted by WFU staff when working in the vicinity of the transformers and compactor.

3.4.5.1.10 Hydraulic Equipment Inspections

In accordance with 40 C.F.R. § 112.7(k)(2)(i), WFU inspects the Coal Yard trash compactor, hydraulic elevators, and hydraulic lift on a monthly basis to ensure that the units are in good condition and the reservoirs are not in danger of leaking or leaking. Inspectors immediately notify the IPC Coordinator of any oil releases. If any problems or deficiencies are noted, they are either addressed by WFU staff or an appropriate vendor is immediately notified to conduct necessary inspections and/or repairs. Inspections are completed on-line by mobile application using the Dakota Software EMS System. Additional informal inspections are conducted by WFU staff when working in the vicinity of the compactor, elevators, and lift.

3.4.5.1.11 Preventive Maintenance Procedures

WFU routinely inspects and replaces equipment as part of its preventive maintenance program. If an inspection shows that continuation of an operation or practice is likely to result in an imminent release, prompt action will be taken. Examples of imminent release indicators include, but are not limited to, leaking valves, and pumps; cracked or corroded containers; malfunctioning relief devices; and inadequate gauging. Tanks are fail-safe engineered to avoid spills, and overfill prevention equipment is regularly tested/inspected to ensure proper operation.

If an inspection shows that an operation or practice is not an imminent threat to cause a release, but is malfunctioning and could lead to a release if not remedied, appropriate repairs/actions are completed as soon as practicable. Visible leaks are promptly corrected. Examples of probable release causes include, but are not limited to, damaged secondary containment structures and external coating deficiencies.

3.4.5.1.12 Recordkeeping Procedures

WFU maintains electronic and / or records of inspections and tests that it performs in accordance with the written procedures described in this chapter. These records are kept with the Oil SPCC Plan in the EH&S Office. All Oil SPCC records are kept for a minimum of three years. See 40 C.F.R. § 112.7(e).

3.4.5.1.13 Gasoline UST Inspections

Although the gasoline UST is not subject to Oil SPCC regulations, it is subject to the federal and State UST regulations. Accordingly, the gasoline UST's leak detection system is inspected monthly and documentation of the inspections is maintained by the EH&S Office for at least one year. See 40 C.F.R. §§ 280.41(a) and 280.45 and 15A NCAC 02N.0502 and .0506.

3.4.5.2 Heating Oil UST Inspections

Since the UST cannot be visually inspected, inspection of that tank will require leak testing. As required by 40 CFR 280, leak detection for USTs can be accomplished by use of: an automatic tank gauging system, secondary containment and interstitial monitoring, vapor monitoring, groundwater monitoring, or statistical inventory reconciliation. The automatic gauging system used for leak testing must be able to detect a leak

of 0.2 gallons per hour when a test is run. For each test, the tank must be taken out of service and the product level and temperature must be measured for at least one hour.

The heating oil UST has a Veeder Root automatic tank gauging system. The fuel in the heating oil UST is used only as an emergency fuel source. Therefore, the quantity of fuel in the tank does not often change. Thus, instead of running a test mode, comparison of fuel levels over twenty-four hours should adequately serve as a leak test, provided that the tank is not in use during that period of time.

3.4.5.3 Reynolda Campus and Wake Downtown B60 Hazardous Waste Storage Area Inspections

The Hazardous Waste Storage Buildings on Reynolda Campus and the Hazardous Waste Chemical Storage Room at Wake Downtown B60 are inspected twice a week using the Dakota Software Environmental Management System. Output from the inspections appears as follows:

The following items are checked during the inspection:

- a. For hazardous wastes other than wastewater treatment sludges from electroplating operations (F006) which meet the conditions for an accumulation time extension in 40 CFR 262.17(c), does the owner/operator of the LQG facility assure that the following on-site HW accumulation time limits are met:
☐ 1) HW is accumulated for no more than 90 days
- b. Does the owner/operator operate and maintain the LQG facility so as to minimize the possibility of fire, explosion, and any unplanned release of hazardous waste or hazardous waste constituents?
- c. Is sufficient aisle space maintained for the unobstructed movement of personnel, fire, spill response and other emergency equipment?
- d. Is all of the following safety equipment available at the facility:
☐ 1) Internal communications or alarm system;
☐ 2) Telephone or two-way radio to summon outside help;
☐ 3) Fire extinguishers and other fire control equipment; and
☐ 4) Water at adequate volume and pressure?
- e. Is the necessary safety equipment provided as follows:
☐ 1) Present and available for use;
☐ 2) Maintained properly; and
☐ 3) Tested periodically?
- f. Whenever HW is being handled, is immediate access to communications and alarm systems assured as follows:

- ☐ 1) All personnel involved have immediate access to an internal alarm or emergency communication device; and
 - ☐ 2) When only one employee is on the premises working with hazardous waste, the employee has immediate access to a telephone or two-way radio?
- g. Are ALL of the following true of containers kept in an on-site accumulation area:
- ☐ 1) The containers are in good condition;
 - ☐ 2) Each container is labeled or marked clearly with the words, "Hazardous Waste" and an indication of the hazards of its contents;
 - ☐ 3) The containers are clearly marked with the date accumulation began;
 - ☐ 4) The containers are kept closed except when waste is added or removed;
 - ☐ 5) The containers and/or their linings are compatible with the waste stored in them; and
 - ☐ 6) The containers are handled and stored properly so they won't rupture or leak?
- h. If a container is not in good condition or if it begins to leak, are EITHER of the following steps taken immediately:
- ☐ 1) The contents of the container are transferred to a container that is in good condition; or
 - ☐ 2) The waste is managed in some other way that complies with the LQG conditions for exemption?
- i. Containers are considered empty and not subject to RCRA's container regulations when they meet the following standards:
- ☐ 1) A compressed gas container when the pressure in the container approaches atmospheric pressure;
 - ☐ 2) For acutely hazardous waste containers, the inner liners that prevent contact with the container have been removed, OR the containers are cleaned with solvent or other appropriate methods;
 - ☐ 3) For all other waste containers, when the wastes are removed using standard industry methods, OR the percent weight of remaining waste are reduced to the mandated levels.
- j. Does the LQG take the following precautions to prevent accidental ignition or reaction of ignitable or reactive waste:
- ☐ 1) Separate and protect ignitable or reactive waste from sources of ignition or reaction; and
 - ☐ 2) When ignitable or reactive waste is being handled, conspicuously place "No Smoking" signs where hazards are present and specifically designate locations where smoking and open flames are permitted?
- k. Are containers of hazardous waste that are incompatible with other materials or wastes stored nearby separated from the other materials or protected by a dike, berm, wall, or other device?

3.4.5.4 Nanotechnology Hazardous Waste Storage Area Inspections

As a CESQG or Very Small Quantity (VSQ) generator of hazardous waste, Nanotechnology Center is not required to document inspections of hazardous waste. However, to ensure the safety of the facility, waste containers are visually checked at least once a week to ensure they are in good condition, not leaks are visible, and they are marked to identify the contents,

3.4.6 Coordination with Natural Resource Trustees

Coordination with natural resource trustees, if required for any incident, will occur through the Office of the Executive Vice-President of Finance and Administration, who in turn may delegate this task to his designee.

3.4.7 Waste management

3.4.7.1 Oil Disposal

The recovery of spilled oil and the removal of contaminated debris is facilitated by an incident follow-up investigation team comprised of the ICP Coordinator and other employees involved with the incident. The ICP Coordinator will determine what, if any, outside assistance is needed, identify applicable federal, state, and local regulatory requirements, and then select one or more of the following waste cleanup/management options:

1. Product Recovery - Whenever feasible, spilled and contained oil will be returned to its original container or process of origin. The ICP Coordinator will ensure all leaks and punctures are repaired first.
2. Off-Site Disposal – Spill materials that cannot be reused will be collected, containerized, characterized, transported, and disposed at an appropriately licensed off-site facility.

Selected cleanup and disposal options will comply with all applicable federal, state, and local laws and rules. Waste oil and decontamination wastes such as gloves, protective clothing, and absorbent material will be classified as either hazardous or non-hazardous waste and appropriately managed according to applicable local, state, and federal regulations.

3.4.7.2 Chemical Disposal

Chemical waste management is handled as described in part 1, Hazard Assessment, above. Disposal of contaminated materials will be managed through the University approved TSDF or through the Emergency Response contractor. This will depend on the type, collection method, and amount of contaminated materials that are generated.

Regardless of the disposal vendor, Wake Forest University will ensure that the end treatment occurs at a permitted facility capable of handling the waste and in accordance with all applicable federal, state, and local laws and rules.

3.5 LOGISTICS

The University Crisis Management Plan (CMP) addresses logistics needs and assigns personnel to these functions in cases where a spill or release would require activation of the ICP and CMP. Information

regarding the Logistics Team, their roles and responsibilities, resides with the University's Emergency Manager.

3.6 FINANCE/PROCUREMENT/ADMINISTRATION

3.6.1 Resource list

3.6.2 Personnel management

Wake Forest University personnel management for an ICP incident would follow NIMS ICS through the CMT Plan. This Plan is available through the office of the University Emergency Manager. Smaller scale response will be managed as indicated in Section III Annex 3b, above.

3.6.3 Response equipment

3.6.3.1 Oil Spill Equipment

All visible spills are immediately stopped and cleaned up using spill kits. An inventory of spill clean-up materials available on campus is provided in the Table, below. Spill kits are used only by trained personnel who are familiar with the hazards posed by the spilled material, and are knowledgeable of how to manage the spill clean-up residue. Any employee who has basic spill response training may respond to small leaks or spills that do not pose significant risks to health or safety. The WFU Environmental, Health and Safety (EHS) Department should be called to handle larger spills. The contents of the spill kits are periodically inspected by the IPC Coordinator or designee to ensure that they are fully stocked and ready for use in the event of an oil spill. If, during an inspection, items are noted as missing from the spill kit, the missing contents are ordered and replaced within the kit as soon as reasonably possible.

Spill Response Equipment

Item	Use	Location
Bulk containers of spill pillows, vermiculite, and booms.	Used for absorbing and stopping flow of chemical and/or petroleum release.	Coal Yard Storage Pad, UCC Loading Dock
Hand tools including non-sparking shovels, squeegees, drum uprighter and drum plug kit	Used for collection of absorbents/booms and chemical spills, up-righting tipped containers, and sealing containers that have small puncture holes.	Coal Yard Storage Pad
Portable spill response kit containing small quantities of vermiculite, spill pillows, drain stopper, tape, absorbent booms and towels for small spills.	For initial response to stop progression of spills and clean up of smaller quantity spills.	Coal Yard Storage Pad

Respirator cartridges (combination) and respirator masks.	For use by trained responders in potentially hazardous atmosphere.	EHS Office
Air Sampling Meters	Check Oxygen, LEL, VOC, H2S and CO levels to ensure safe working atmosphere.	EHS Office
Level C and B suits, full-face supplied air respirators, supplied air tanks, and PPE gloves and boots.	For personal protection during emergency response and clean up to reduce chance of chemical exposure due to skin contact. Supplied air respirators for use by trained personnel in hazardous atmosphere to prevent inhalation of airborne chemicals and in low oxygen environment.	EHS Office and Coal Yard Storage Pad
Spill kits for minor spills are located in individual buildings where hazardous waste is generated and oil is stored.	For absorption of chemicals from small quantity spills.	Olin, Salem, Winston, University Police, Utilities Operations Center, Coal Yard Storage Pad, EHS Trailer and all four Chiller Plants (North, South, West and Worrell)

3.6.4 Support equipment

If needed, Facilities and Campus Services has the capability to operate the tele-handler and other equipment for handling large or bulky loads. Additional support equipment, if required, would be arranged for through F&CS and the Logistics Section of the CMT.

3.6.5 Contracting

The ICP Coordinator will contact Zebra Environmental or Shamrock Environmental Corporation, the emergency response contractors (ERC), to aid in any clean-up operation that can not be handled internally. Wake Forest University has contracted with Zebra and Shamrock to provide response services as needed.

In the event additional resources are needed (or needed quicker than the emergency response contractor can mobilize), the Response Coordinator will contact the Winston-Salem Fire Department for assistance with containment of released oil. The ERC will then be contacted for clean-up services.

The State of North Carolina operates seven Hazardous Materials Regional Response Teams. These teams may assist in spill containment. The nearest regional response team is located in Greensboro. The decision to call the State Emergency Operations Center would be made by the RC and the Fire Chief.

3.6.6 Claims procedures

All claims will be handled through the WFU Office Risk Services:

Risk Services
Financial and Accounting Services
Wake Forest University
P O Box 7201
Winston-Salem, NC 27109

Risk Services works to protect the University community and its resources by identifying and managing risks on campus. Risk Services also maintains the insurance policies for the University.

3.6.7 Cost documentation

The WFU Financial Services Department will oversee:


- Procurement Services to assist in service research, locating and selecting suppliers, obtaining competitive and contract pricing and administers the University PCard (credit card) system;
- Financial Operations that includes Accounts payable for outgoing payments, as well as employee reimbursement requests. Payroll administers the University timekeeping application and processes pay for all campus employees.

4. ANNEX 4 - INCIDENT DOCUMENTATION

4.1 POST ACCIDENT INVESTIGATION

In the case of a spill or release of oil the following form will be completed as soon as practicable:

Spill Report Form

Person Reporting:		Phone Number:
Date of Incident:	Time of Incident: AM PM	Quantity Spilled
Quantity Contained or Recovered	Method of Disposal of Recovered Material	
Location of Spill	Type of Material Spilled	
Source of Spill (Pipe, 55-Gallon drum, Equipment, etc.)		
Cause of Spill or Factors Contributing to Release <input type="checkbox"/> Equipment Failure <input type="checkbox"/> Training Deficiencies <input type="checkbox"/> Operator Error <input type="checkbox"/> Weather Conditions <input type="checkbox"/> Faulty Process Design <input type="checkbox"/> Other _____		
Immediate Actions Taken <input type="checkbox"/> Containment <input type="checkbox"/> Neutralization <input type="checkbox"/> Dilution <input type="checkbox"/> System Shut Down <input type="checkbox"/> Evacuation <input type="checkbox"/> Other _____		
Surface Area Affected (square feet, inside and/or outside)		
Any Release to the Environment? <input type="checkbox"/> Yes <input type="checkbox"/> No	Area(s) affected (soil, water, air)	
Notification of Emergency Responders (Fire Department, NC Emergency Management, NCDENR, etc): Agency: Agency: Phone Number: Phone Number: Actions Taken: Actions Taken:		
Clean-up Closure Actions (Monitoring, Soil Testing/Remediation, etc.)		
List Any Injuries Related to Spill		
List Names of People Involved in Spill		
Comments: <div style="text-align: right;">  Return to: fisennsw@wfu.edu 336-830-9394 </div>		

Upon receipt of the report, EHS will investigate the spill or release with assistance of other departments, if necessary, to determine the cause and to institute any required changes that may prevent a future release.

4.2 INCIDENT HISTORY

This section will include an incident history where the ICP was activated from time of issuance, July 2017.

5. ANNEX 5 - TRAINING

This section describes the IPC Training and Annual Discharge Prevention Briefings that WFU provides to its chemical and oil-handling employees, as required by 40 C.F.R. § 112.7(f) for both Reynolda Campus and University Corporate Center.

5.1 OIL SPCC TRAINING

WFU provides Oil SPCC training to all oil-handling employees and those who play a role in the implementation of this Plan. WFU's Oil SPCC training program instructs employees involved with the handling of oil and/or oil containment devices, structures, and equipment on:

3. Contents of WFU's Oil SPCC Plan;
4. The proper operation and maintenance of equipment to prevent discharges and general facility operations;
5. Oil discharge procedures, including notification and use of available spill equipment;
6. Instructions regarding applicable oil pollution control laws, rules, and regulations; and
7. Instructions regarding tank inspection procedures (designated employees only).

Oil SPCC training is provided to all new oil-handling employees. Oil SPCC training records are maintained with this Plan by the IPC Coordinator.

5.2 DISCHARGE PREVENTION BRIEFINGS

Annual discharge prevention briefings are conducted for oil-handling personnel, and cover the following topics:

8. *Oil SPCC Plan Update* – discuss any Plan changes to ensure that oil-handling employees retain an adequate understanding of the Oil SPCC operations.
9. *Discharges* – highlight and describe discharges that have occurred in the past year; discuss response actions; effectiveness of oil spill response equipment; describe actions taken to prevent recurrence.
10. *Failures and Malfunctioning Components* – discuss any known equipment failures or malfunctioning components related to oil storage.
11. *Precautionary Measures* – brainstorm current or new precautionary measures to prevent oil releases.

Records of Annual Discharge Prevention Briefings are maintained with this Plan by the IPC Coordinator.

5.3 RCRA HAZARDOUS WASTE COMPLIANCE FOR GENERATORS OF HAZARDOUS WASTE

The North Carolina Manufacturers Association holds an annual RCRA training seminar, taught by the staff of the NCDEQ Hazardous Waste Section. Attendance at this seminar fulfills the annual training requirement for handlers of hazardous waste.

The course is attended by the ICP Coordinator, Alternate Coordinator, Environmental Specialist and the Environmental Technician. These are the only individuals trained to manage hazardous waste on WFU properties.

6. ANNEX 6 - RESPONSE CRITIQUE AND PLAN REVIEW AND MODIFICATION PROCESS

6.1 IMMEDIATE PLAN REVIEW AND MODIFICATION

The Integrated Contingency Plan must be reviewed, and immediately amended, if necessary, whenever:

1. It fails in an emergency;
2. The covered campuses change significantly in design, construction, operation, or maintenance in a manner likely to impact the effectiveness of this Plan;
3. Some other circumstance significantly increases the potential for releases of chemical or oil products or other changes in the response necessary in any emergency;
4. An exercise or emergency response drill indicates an amendment is necessary;
5. Either responsible WFU personnel or the response equipment list changes;
6. The Regional Administrator of the EPA deems a change to be necessary; or
7. There is a change in applicable statutes or regulations.

6.2 PLAN REVIEW (40 CFR 112.5(B))

The Plan must be reviewed at annually. The reviewer must document the review. Additionally, the Plan must be revised whenever there is a change in facility design, construction, operation or maintenance that materially affects the facility's potential for the discharge of oil. Examples of changes that may require amendment of the Plan include, but are not limited to: commissioning or decommissioning containers; replacement, reconstruction, or movement of containers; reconstruction, replacement, or installation of piping systems; construction or demolition that might alter secondary containment structures; changes of product or service; or revision of standard operation or maintenance procedures at a facility. Revisions to the SPCC or OSC Plans must be documented and maintained and placed in this document.

Because WFU has an aboveground oil storage capacity of greater than 10,000 gallons, it does not meet the definition of a “qualified facility,” and therefore may not self-certify its Oil SPCC Plan. The initial Plan and any technical amendments must be certified by a licensed Professional Engineer (P.E.).

See 40 C.F.R. §§ 112.3(g) and 112.6.

Internal Plan Copies

A complete copy of this Plan will be maintained in the following locations:

- WFU EH&S Department
- Utilities Operations Center

The Plan will be available for review during normal working hours. When amendments are necessary, copies of the amendments will be included in all WFU Plan copies. See 40 C.F.R. § 112.3(e).

Engineer's Certification

I hereby certify that I am familiar with the oil storage facilities at the covered WFU campuses and with this Oil SPCC Plan. I attest that:

1. I am familiar with the requirements of 40 C.F.R. Part 112;
2. My agent has visited and examined the facilities;
3. This Oil SPCC Plan has been prepared in accordance with good engineering practice, including consideration of applicable industry standards, and with the requirements of 40 C.F.R. Part 112;
4. Procedures for required inspections and testing have been established; and
5. This Plan is adequate for the WFU facilities.

40 C.F.R. § 112.3(d)

<hr style="border: none; border-top: 1px solid black; margin-bottom: 5px;"/> <p>Name of Registered P.E.</p> <p>Date_____</p>	<hr style="border: none; border-top: 1px solid black; margin-bottom: 5px;"/> <p style="text-align: center;">ORIGINAL ON FILE</p> <p>Signature of Registered P.E.</p> <p>Registration No. 31048 State: North Carolina</p>
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ICP Provisions Review Log

Review #1

“I have completed a review and evaluation of WFU’s ICP on _____ and [will/will not] amend the Plan as a result.”

Name: _____

Signature: _____

Title: _____

7. ANNEX 7 – PREVENTION

This Annex describes the routine and emergency security measures that WFU implements for the campus and chemical and oil storage locations. This chapter meets the requirements of 40 C.F.R. § 112.7(g).

7.1 ROUTINE SECURITY MEASURES

Because WFU is a public college, access to the campus is unrestricted. However, University Police are on duty and patrol the grounds seven days per week, 24 hours per day. In addition, WFU attempts to provide adequate lighting in all areas of the campus for safety purposes. This lighting also facilitates the discovery of potential visible oil spills and discourages vandalism. Because of the size of the WFU property and the number of individual oil storage facilities, it is not feasible to provide fencing for security. Equivalent environmental protection is afforded through the routine security measures in place.

7.2 SECURITY DURING EMERGENCIES

During an emergency, all facility access would be controlled, and only emergency response and other authorized responders (e.g., municipal responders, approved contractors, and regulatory authorities) would be allowed access to the affected areas. Communication during a large-scale emergency would be controlled through University Police Dispatch located in Alumni Hall. WFU has multiple means of communication available to coordinate an emergency including hand-held radios, cell phones, telephones, text messaging, and e-mail. Emergency procedures are detailed in WFU's comprehensive Chemical Emergency Response Plan. The ICP Coordinator will be the primary liaison with emergency response agencies.

Upon notification that a release has occurred, the ICP Coordinator will designate certain employees to assist with the release perimeter security while the incident is assessed. Designated employees will immediately restrict facility access to only essential emergency response personnel. Affected campus entry points will be secured immediately, if not already secured. These steps will facilitate an organized and efficient response to an oil release.

7.3 SECURITY FOR OIL STORAGE FACILITIES – REYNOLDA CAMPUS AND BB&T FIELD

The pumps for the diesel and gasoline ASTs are activated with fuel keys that are issued only to authorized personnel. Most generator tank fill ports are located in locked generator cases. In addition, tank fill ports are capped when tanks are not being filled. Transformer cases are locked, and hydraulic elevator reservoirs are located in locked rooms. Flow and drain valves that directly discharge out are locked in closed position when not operational. Oil pump starter controls are locked in "off" position or only accessible to authorized personnel when not in use. The UOC is staffed 24 hours per day and personnel routinely monitor oil storage facilities located there.

7.4 SECURITY FOR OIL STORAGE AT UNIVERSITY CORPORATE CENTER

The transformers are located within a locked area. While the emergency generators and underground storage tank are not located within a fenced area, the entire facility is monitored by security twenty-four hours per day, seven days per week.

Locks are provided for any valves that can allow direct discharge under gravity conditions, including drainage valves from containment structures. Pump starter controls are locked in the off position when not in use and the controls are in an area that is only accessible to authorized personnel. Loading/unloading connections are securely capped when not used. Pipes shall be blank-flanged if not in service for an extended period of time.

The emergency generators and UST fill ports are located within spill containment buckets. Since these containers are not located in a fenced area, either the buckets or the fill port caps must be kept locked, except when being accessed. All controls associated with the emergency generator are located within a locked cabinet. The emergency generator interstitial space has a basin drain that can only be removed with special tools. The transformer reservoirs are located in a locked cabinet within a locked area.

The facility has adequate lighting throughout to assist in the discovery of discharges during darkness and prevent discharges from acts of vandalism. Specifically, there is lighting located in the vicinity of the emergency generator, heating oil UST and the transformers. Additionally, there is a monitored security camera located adjacent to the entrance to the transformer area and in other areas throughout the facility.

7.5 SECURITY FOR CHEMICAL STORAGE AREAS

Reynolda Campus buildings are typically locked and accessible only by key card after 8PM during semester. Doors are unlocked between 7:30-8:00AM. Buildings are patrolled by WFU Security after normal hours. Laboratory doors are locked when no one is present in the lab. This includes hours when the building may otherwise be occupied.

Wake Downtown is accessible only by keycard or through an open front entrance that is manned during normal business hours. After hours, all doors are accessible only by keycard. Laboratories are locked after hours or when no one is present in the lab.

All outer doors to the Center for Nanotechnology are always locked, and accessible only by key. In addition, interior laboratories are locked when unoccupied.

8. ANNEX 8 - REGULATORY COMPLIANCE AND CROSS-REFERENCE MATRICES

ICP Elements	RCRA (40 CFR part 264, Subpart D, 40 CFR part 265, Subpart D, and 40 CFR 279.52)	EPA's Oil Pollution Prevention Regulation (40 CFR part 112)	USCG-FRP (33 CFR part 154)	DOT/RSPA-FRP (49 CFR part 194)	OSHA Emergency Action Plans (29 CFR 1910.38(a)) and Process Safety (29 CFR 1910.119)	OSHA HAZWOPER (29 CFR 1910.120)	CAA RMP (40 CFR 68)
Section I - Plan Introduction Elements							
1. Purpose and scope of plan coverage	264.51 265.51 279.52(b)(1) 264.52(a) 265.52(a) 279.52(b)(2)(i)				38(a)(1) ¹ 119(n) 272(d)	(1) ² (p)(8) (q)(1)	
2. Table of contents		112.20(h) Appendix F	1035(a)(4) ³ 1030(b)	Appendix A			
3. Current revision date		F1.2	1035(a)(6)				
4. General facility identification information		F1.2 F1.9		194.107(d)(1)(i) 194.113 194.113(b)(1)			
a. Facility name		F1.2	1035(a)(1)				
b. Owner/operator/agent		112.20(h)(2) F1.2 F2.0	1035(a)(3)	194.113(a)(1) A-1			
c. Physical address and directions		112.20(h)(2) F1.2 F2.0	1035(a)(1) 1035(a)(2) 1035(e)	194.113(a)(2) 194.113(b)(3),(4) A-1			
d. Mailing address		112.20(h)(2)	1035(a)(1)	194.113(a)(1)			
e. Other identifying information							
f. Key contact(s) for plan development and maintenance					38(a)(2)(iv)	(l)(2)(i),(ii) (p)(8)(ii)(A),(B) (q)(2)(i),(ii)	
g. Phone number for key contact(s)							
h. Facility phone number		F1.2 F2.1	1035(a)(1)				
i. Facility fax			1035(a)(1)				
Section II - Core Plan Elements							
1. Discovery		112.20(h)(6) F1.6.1, F1.6.2	1035(b)(3)(i)	194.107(d)(1)(iii) A-3	119(n)	(l)(2)(iii) (p)(8)(iii)(C) (q)(2)(iii)	68.95(a)(1)(iii)
2. Initial response		112.20(h)(7)(i) F1.3.6 F1.7	1035(b)(2)(ii) 1035(b)(3)(i) 1035(b)(3)(ii)	A-2	38(a)(2)(i) 38(a)(2)(ii) 119(n)	(l)(2)(ix) (p)(8)(ii)(l) (q)(2)(ix)	68.95(a)(1)(iii)
a. Procedures for internal and external notifications	264.52(d) 265.52(d) 279.52(b)(2)(iv) 264.55 265.55 279.52(b)(5) 264.56(a)(1),(2) 165.56(a)(1),(2) 279.52(b)(6)(i)(A),(B) 264.56(d)(1),(2) 265.56(d)(1),(2) 279.52(b)(6)(iv)(A),(B)	112.20(h)(1)(iii) 112.20(h)(3)(iii) 112.20(h)(3)(iii) 112.20(h)(3)(iv) F1.2 F1.3.1	1026 1035(a)(3) 1035(b)(1)(i) 1035(e)(2)	194.107(d)(1)(i) 194.113(b)(2) A-1, A-1(b)(2) A-2 A-5	38(a)(2)(v) 38(a)(2)(vi) 38(a)(3)(i) 38(a)(3)(ii) 165	(l)(2)(ix) (p)(8)(ii)(1) (q)(2)(ix)	68.95(a)(1)(i)

b. Establishment of a response management structure	264.37	112.20(h)(1)(v)	1035(b)(3)(iii)	194.107(d)(1)(v)		(l)(2)(i),(ii)	
	265.37	112.20(h)(3)(v)		A-4		(p)(8)(ii)(A),(B)	
	279.52(a)(6)	F1.3.4		A-9		(q)(2)(i),(ii)	
	264.52(c)					(q)(3)(i)	
	265.52(c)						
	279.52(b)(2)(iii)						
c. Preliminary assessment	264.56(b),(c)	112.20(h)(3)(ix)	1035(b)(3)	194.107(d)(1)(ii)	38(a)(2)(i)	(l)(2)(i)	
	265.56(b),(c)	112.20(h)(4)	1035(b)(4)(i)		38(a)(2)(ii)	(l)(3)(vii)	
	279.52(b)(6)(ii), (iii)	F1.4, F1.4.2				(p)(8)(ii)(A)	
						(q)(2)(i)	
						(q)(3)(ii),(iii)	
d. Establishment of objectives and priorities for response, including:	264.52(e)	112.20(h)(1)(iv)	1035(b)(2)	194.107(d)(1)(iii)	38(a)(4)	(l)(2)(vi),(viii)	
	265.52(e)	112.20(h)(1)(vii)	1035(b)(3)(iv), (v)	194.107(d)(1)(v)	119(n)	(p)(8)(ii)(F),(H)	
	(1) Immediate goals/tactical planning	279.52(b)(2)(v)	112.20(h)(3)(iv)			(q)(2)(vi),(vii)	
	(2) Mitigating actions		112.20(h)(3)(ix)			(p)(8)(iv)(F)	
	(3) Response resources		112.20(h)(7)			(q)(3)(ii),(iii),(iv),(vi),(vii),(viii)	
		F1.3.2					
		F1.7.1, F1.7.3					
e. Implementation of tactical plan	264.52(e)	112.20(h)(3)(ix)	1035(b)(2)(iii)	194.107(d)(l)(v)	38(a)(2)(ii)	(l)(3)(vii)	
	265.52(e)	112.20(h)(7)	1035(b)(3)	A-3		(p)(8)(iv)(F)	
	279.52(b)(2)(v)		1035(b)(4)(iii)			(q)(3)(iii)	
f. Mobilization of resources	264.52(e)	112.20(h)(7)	1035(b)(2)(iii)	194.115		(l)(2)(ix)	
	265.52(e)	F1.7.1	1035(b)(3)	194.107(d)(l)(v)		(p)(8)(ii)(l)	
	279.52(b)(2)(v)		1035(b)(4)(iii)	A-1		(q)(2)(ix)	
				A-3			
3. Sustained actions		112.20(h)(7)	1035(b)(3)	194.107(d)(1)(v)	38(a)(2)(iii)	(l)(2)(x)	68.95(a)(l)(iii)
				A-9		(p)(8)(ii)(J)	
4. Termination and follow-up actions	264.56(i)	112.20(h)(7)	1035(b)(3)			(q)(2)(x)	
	265.56(i)						
Section III - Annexes							
1. Facility and locality information		112.20(h)(2)	1035(a)	194.107(d)(1)(i)			
		F1.2	1035(e)(1)	194.113			
		F2.0		194.113(b)(1)			
a. Facility maps		112.20(h)(1)(viii)	1035(e)	194.113(b)(2)			
		F1.9		A-9			
b. Facility drawings		112.20(h)(1)(viii)	1035(e)	A-9			
		112.20(h)(9)					
		F1.9					
c. Facility description/layout		F1.9	1035(b)(4)	A-9		(l)(3)(i)(A)	
						(p)(8)(iv)(A)(1)	
2. Notification	264.52(d)	112.20(h)(1)(ii)		194.107(d)(1)(ii)	119(n)	(l)(3)(i)(B)	68.95(a)(1)(i)
	265.52(d)			A-2			
	279.52(b)(2)(iv)				165(b)(1)		
	264.56(a)(1),(2)				165(b)(4)		
	265.56(a)(1),(2)				272(d)		
	279.52(b)(6)(i)(A),(B)				(p)(8)(iv)(A)(2)		
	264.56(d)(1),(2)				(q)(2)(ix)		
	265.56(d)(1),(2)						
	279.52(b)(6)(iv)(A),(B)						

a. Internal		112.20(h)(3)(iii)	1035(b)(1)(i)	194.107(d)(1)(iv)	119(n)	(l)(2)(ix)	
		F1.3.1	1035(b)(1)(ii)		165(b)(1)	(q)(2)(ix)	
			1035(e)(2)			(p)(8)(iii)(1)	
b. Community		112.20(h)(3)(iii)	1035(b)(1)(i)		119(n)	(l)(2)(i),(ii),(ix)	
		112.20(h)(3)(ix)	1035(b)(1)(ii)			(p)(8)(iii)(A),(B),(I)	
		F1.3.1	1035(e)(2)			(q)(2)(i),(ii),(ix)	
c. Federal and state agency		112.20(h)(3)(iii)	1035(b)(1)(i)	194.107(d)(1)(v)		(l)(2)(i),(ii),(ix)	
		112.20(h)(3)(ix)	1035(b)(1)(ii)			(p)(8)(iii)(A),(B),(I)	
		F1.3.1	1035(e)(2)			(q)(2)(i),(ii),(ix)	
3. Response management structure		112.20(h)(1)(v)	1035(b)(3)(iii)	194.107(d)(1)(v)		(q)(3)(i)	
		112.20(h)(3)(v)		A-9			
		F1.3.4					
a. General	264.52(c)		1035(b)(3)(iii)			(q)(3)(i)	
	265.52(c)						
	279.52(b)(2)(iii)						
b. Command		112.20(h)(3)(iv)				(q)(3)(i)	
(1) Facility incident commander and qualified individual	264.55	112.20(h)(1)(i)	1026	A-4		(q)(3)(i)	
	265.55	F1.2.5					
	279.52(b)(5)						
(2) Information	264.56(a)(1),(2)	112.20(h)(3)(iii)	1035(b)(3)(iii)	194.107(d)(1)(v)	38(a)(2)(vi)	(q)(3)(i)	
	265.56(a)(1),(2)		1035(e)(4)	A-2	38(a)(5)(iii)		
	279.52(b)(6)(i)(A),(B)						
(3) Safety	264.52(f)	112.20(h)(1)(v)	1035(b)(3)(iii)		38(a)(2)(i)	(l)(2)(iv),(vi)	
	265.52(f)	112.20(h)(3)(vi)	1035(e)(5)		38(a)(2)(iii)	(p)(8)(iii)(D),(F)	
	279.52(b)(2)(v)	112.20(h)(3)(viii)			38(a)(2)(iv)	(q)(2)(iv),(vi)	
		F1.3.5			38(a)(4)	(q)(3)(vi),(vii)	
(4) Liaison			1035(b)(3)(iii)		38(a)(2)(vi)	(l)(2)(i),(ii)	
						(p)(8)(iii)(A),(B)	
						(q)(2)(i),(ii)	
c. Operations			1035(b)(3)(iii)	194.107(d)(1)(v)	38(a)(2)(i)(v)	(q)(3)(iii),(v)	
(1) Response objectives			1035(b)(2)(iii)		38(a)(1)	(q)(3)(iii)	
			1035(b)(4)(iii)				
(2) Discharge or release control	264.56(e)	112.20(h)(3)(i)	1035(b)(2)	194.107(d)(1)(v)			
	265.56(e)	112.20(h)(7)(iv)	1035(b)(2)(iii)	A-3			
	279.52(b)(6)(v)	112.20(h)(1)(vii)	1035(b)(4)(iii)				
(3) Assessment/monitoring	264.56(b),(c),(d),(f)	112.20(h)(3)(ix)	1035(b)(2)(iii)		38(a)(3)(ii)	(q)(3)(ii)	
	265.56(b),(c),(d),(f)	F1.7.1	1035(b)(3)		38(a)(4)		
	279.52(b)(6)(ii),(iii),(iv),(v)		1035(b)(4)(iii)				
(4) Containment	264.56(e)	112.20(h)(1)(vi)	1035(b)(2)(iii)	194.107(d)(1)(v)			
	265.56(e)	112.20(h)(3)(i)	1035(b)(3)(iv)				
	279.52(b)(6)(v)	112.20(h)(7)(iv)	1035(b)(4)(iii)				
		F1.7.3					
(5) Recovery		112.20(h)(3)(i)	1035(b)(2)(iii)	194.107(d)(1)(iv)			
		112.20(h)(7)(iii)	1035(b)(3)(iv)				
		F1.7.2	1035(b)(4)(iii)				

(6) Decontamination	264.56(h)(2)	112.20(h)(7)(iii)				(k)	
	265.56(h)(2)	F1.7.2		194.107(d)(1)(iv)		(l)(2)(vii)	
	279.52(b)(6)(vii)(B)					(p)(8)(iii)(G)	
						(q)(2)(vii)	
						(q)(3)(ix)	
(7) Non-responder medical needs			1035(e)(5)		38(a)(2)(iv)	(l)(2)(viii)	68.95(a)(1)(ii)
						(p)(8)(ii)(H)	
						(q)(2)(viii)	
(8) Salvage plans				194.107(d)(1)(v)			
d. Planning				194.107(a)	38(a)(1)	(l)(2)(i),(ix)	
				194.115	38(a)(4)	(p)(8)(ii)(A),(I)	
						(q)(1)	
						(q)(2)(i),(ix)	
(1) Hazard assessment		112.20(h)(3)(ix)	1029	194.105		(l)(1)(ii)(C),(D)	68.20-36
		112.20(h)(4)	1035(b)(4)(ii)	194.113(b)(6)		(p)(8)(iv)(A)(1),(F)	68.5
		112.20(h)(5)			38(a)(4)	(q)(3)(iii)	68.67
		112.20(h)(7)(ii)					
		F1.4.1-F1.4.3					
		F1.5.1,F1.5.2					
(2) Protection		112.20(h)(7)(i)				(l)(2)(iv),(v),(vi)	
		112.20(h)(7)(iv)	1035(b)(4)			(p)(8)(ii)(D),(E),(K)	
		F1.7.1,F1.7.3				(q)(2)(iv),(v),(vi)	
						(q)(3)(iii)	
(3) Coordination with natural resource trustees		112.20(g)	1030(f)	194.107(c)			
(4) Waste management	264.56(h)(1)	112.20(h)(7)(iv)					
	265.56(h)(1)	F1.7.2					
	279.52(b)(6)(vii)(A)		1035(b)(5)	194.107(d)(1)(iv)			
	264.56(g)						
	265.56(g)						
	279.52(b)(6)(vii)						
e. Logistics			1035(b)(3)(iii)			(l)(3)(iii)	
						(p)(8)(iv)(B)	
						(q)(2)(xii)	
(1) Medical needs			1035(e)(5)		38(a)(2)(iv)	(l)(2)(viii)	68.95(a)(1)(ii)
						(p)(8)(ii)(H)	
						(q)(2)(viii)	
(2) Site security		112.20(h)(10)				(l)(2)(v)	
		F1.10				(p)(8)(iii)(E)	
						(q)(2)(v)	
(3) Communications		112.20(h)(1)(iv)	1035(e)(3)	194.107(d)(1)(v)	38(a)(3)	(q)(3)(i)	
		112.20(h)(3)(iv)		A-2	119(e)(3)(iii)		
		F1.3.2			165(b)		
(4) Transportation							
(5) Personnel support		112.20(h)(1)(v)			38(a)(5)(i)	(l)(2)(ii)	
		112.20(h)(1)(vi)				(p)(8)(ii)(B)	
		112.20(h)(3)(i-ii)				(q)(2)(ii)	
		112.20(h)(3)(v)				(q)(3)(v),(vi)	
		112.20(h)(3)(vii)					
		F1.3.5					

(6) Equipment maintenance and support		112.20(h)(1)(iv)	1035(b)(3)(iv)	194.107(d)(1)(viii)	119(j)(4)	(l)(2)(x)	68.95(a)(2)
		112.20(h)(3)(v)	1035(e)(3)		119(j)(5)	(p)(8)(ii)(K)	
		112.20(h)(8)	1057		165(d)	(q)(2)(x)	
		F1.3.3					
		F1.8.1					
f. Finance/ procurement/ administration		112.20(h)(3)(ix)	1028				
			1035(b)(3)(iii)				
(1) Resource list	264.52(e)	112.20(h)(1)(iv)	1035(b)(3)(iv)				
	265.52(e)	112.20(h)(3)(v)	1035(e)(3)				
	279.52(b)(2)(v)	F1.3.2					
		F1.7.1					
(2) Personnel		112.20(h)(1)(v)					
		112.20(h)(3)(v)	1035(b)(3)(iv)				
		F1.3.4					
(3) Response equipment	264.52(e)	112.20(h)(1)(iv)	1035(b)(2)(ii)			(l)(2)(x)	
	265.52(e)	112.20(h)(3)(v)	1035(b)(4)(iii)			(p)(8)(ii)(K)	
	279.52(b)(2)(v)	F1.3.2	1035(e)(3)			(q)(2)(x)	
		F1.7.1	Appendix C				
(4) Support equipment	264.52(e)	F1.3.2					
	265.52(e)	F1.7.1	1035(e)(3)				
	279.52(b)(2)(v)						
(5) Contracting		112.20(h)(3)(ii)	1028(a)(1)	194.115			
			1035(e)(3)				
(6) Claims procedures							
(7) Cost documentation							
4. Incident documentation					38(a)(2)(iii)	(l)(2)(x)	
					119(e)(3)(ii)	(p)(8)(ii)(J)	
						(q)(2)(x)	
a. Post accident investigation	264.56(j)					(l)(2)(x)	68.6
	265.56(j)				119(m)	(p)(8)(ii)(J)	68.81
	279.52(b)(6)(ix)					(q)(2)(x)	
b. Incident history		112.20(h)(4)			119(e)(3)(ii)		68.42
		F1.4.4					
5. Training and exercise/drills		112.20(h)(8)	1035(c)	194.107(d)(1)(vii)	38(a)(5)	(l)(3)(iv)	
		112.21	1050	194.107(d)(1)(ix)	119(g)(1)(i)	(p)(8)(iii)	
		F1.8.2,F1.8.3	1055	194.117		(q)(6)	68.95(a)(3)
			Appendix D	A-6			
				A-7			
6. Response critique and plan review and modification process	264.54		1035(a)(6)	194.107(d)(1)(x)	119(l)	(l)(2)(x)	
	265.54		1035(d)	194.111	119(o)(1)	(p)(8)(ii)(J)	
	279.52(b)(4)	112.20(g)	1065	194.119		(q)(2)(x)	68.95(a)(4)
				194.121			
				A-8			
7. Prevention						(l)(2)(iii)	
						(p)(8)(ii)(C)	
						(q)(2)(iii)	

9. APPENDIX 1 - APPLICABILITY OF THE SUBSTANTIAL HARM CRITERIA CHECKLIST

Facility Name: Wake Forest University and Wake Forest University Corporate Center

Facility Address: 1834 Wake Forest Road, Winston-Salem, North Carolina and
1100 Reynolds Boulevard, Winston-Salem, NC 27105

1. Does the facility transfer oil over water to or from vessels and does the facility have a total oil storage capacity greater than or equal to 42,000 gallons? Yes:_____ No: X
2. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and does the facility lack secondary containment that is sufficiently large to contain the capacity of the largest aboveground oil storage tank plus sufficient freeboard to allow for precipitation within any aboveground oil storage tank area? Yes:_____ No: X
3. Does the facility have a total oil storage capacity greater than or equal to one million gallons and is the facility located at a distance such that a discharge from the facility could cause injury to fish, wildlife, and sensitive environments? Yes:_____ No: X
4. Does the facility have a total oil storage capacity of greater than or equal to 1 million gallons and is the facility located at a distance such that a discharge from the facility would shut down a public drinking water intake? Yes:_____ No: X
5. Does the facility have a total oil storage capacity greater than or equal to 1 million gallons and has the facility experienced a reportable oil spill in an amount greater than or equal to 10,000 gallons within the last five years? Yes:_____ No: X

CERTIFICATION OF APPLICABILITY OF SUBSTANTIAL HARM

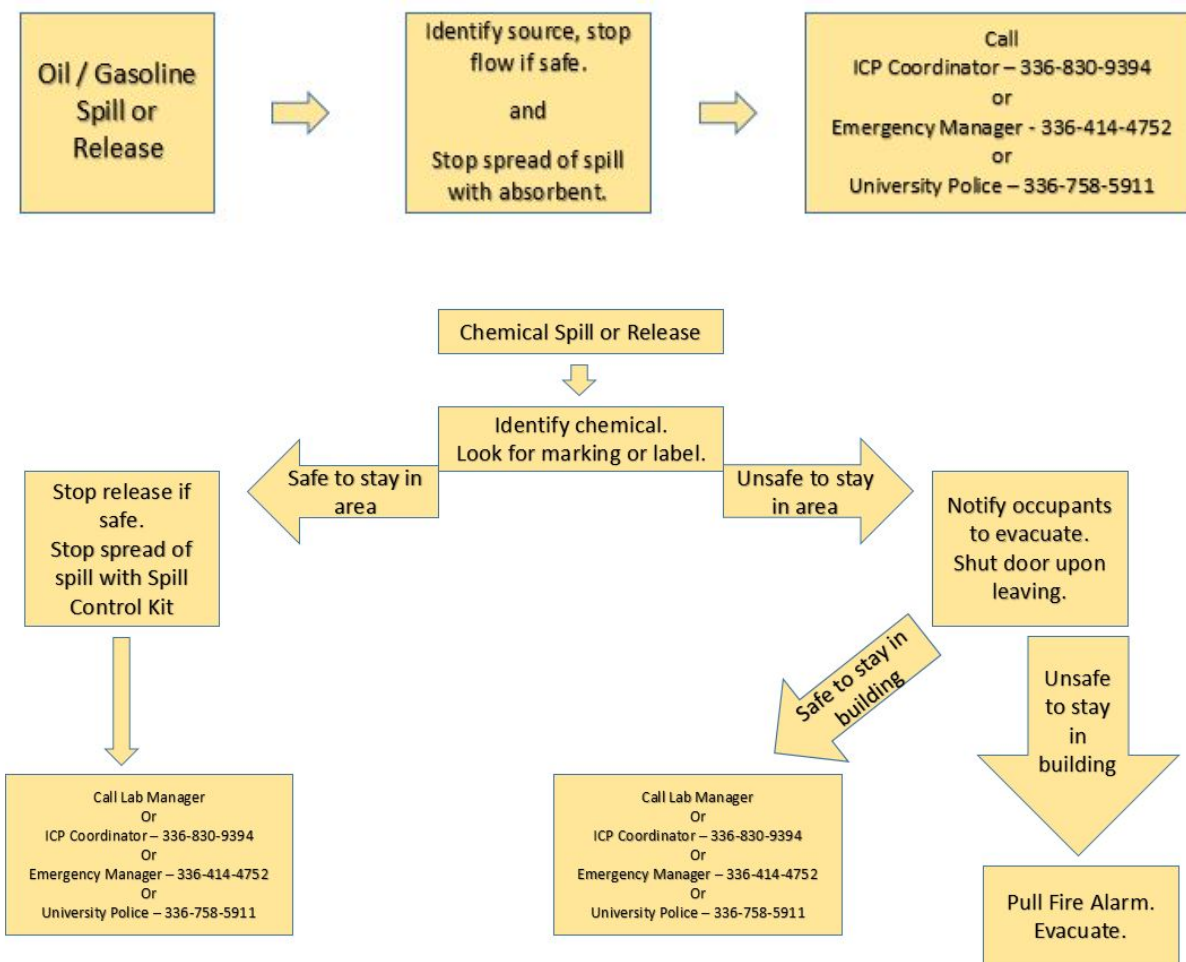
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals responsible for obtaining this information, I believe that the submitted information is true, accurate, and complete.

ORIGINAL ON FILE_____

Hof Milam, Senior Vice-President / CFO

Date _____

10. APPENDIX 2 – GENERAL SPILL RESPONSE PROCEDURES



If the clean up will be conducted by WFU personnel, the following general procedures should be followed:

1. Eliminate ignition sources that may be present.
2. Avoid contact with spilled product.
3. Don appropriate PPE.
4. Stop the source of the release if it is safe to do so.
5. Contain the released oil or chemical with absorbent materials.
6. Prevent released material from entering sewers, water bodies, drains, and confined spaces.
7. Restrict access to impacted and potentially threatened areas.
8. If outside, keep unprotected personnel upwind of spill area. If inside, keep all personnel out of the room except those involved in spill clean up.
9. If spill occurs on an unpaved area, remove and dispose of all contaminated soil in accordance with applicable rules.
10. Choose clean-up equipment, that will not react with, be corroded or otherwise damaged by the spilled product. Use explosion-proof and spark-proof equipment, where necessary.
11. Ensure recovered spill material is collected, containerized, labeled, properly characterized, and disposed of in accordance with all applicable requirements.