1. INTRODUCTION

1.1. STATEMENT OF PURPOSE

This Amended Construction Management Plan (CMP) has been prepared by the French-American School of New York (FASNY) and Turner Construction Company, and is submitted in draft for review and comment by the White Plains Common Council. This Amended CMP has been prepared in compliance with the State Environmental Quality Review (SEQRA) Statement of Findings adopted by the White Plains Common Council for the Proposed Project. The Findings at N-2 requires the preparation of a CMP as a condition of any Special Permit/Site Plan approval. This Amended CMP has been prepared to avoid, minimize or mitigate any adverse impacts from construction activities. The Findings addressed are individually referenced in the articles that follow.

This Amended CMP, supporting the Alternative Site Plan Application, is substantially similar to the CMP submitted in support of the Original Site Plan Application. The description of the project phasing as well as the construction phasing plans have changed from the Original CMP.

1.2. PROJECT PHASING

As a result of the cap in student enrollment at 640 students, and the imposition by the Common Council and cost of various mitigation measures, FASNY was required to reconfigure certain programmatic elements (e.g., classroom space, athletic facilities), and to defer certain improvements to a later date to allow for replenishment of capital resources.

Phase IA is currently planned to include construction of a single Upper School building for Grades 6 to 12 and the proposed gymnasium. Phase IA also includes two multi-purpose athletic fields, a 6-lane track, six tennis courts and a greenhouse. Construction of the Performing Arts Center, and a third basketball and squash courts, which would complete the planned academic quadrangle on Parcel A, would be deferred until Phase IB. In addition, the proposed multi-purpose athletic field in the northwest corner of Parcel A and the softball/baseball field on western Parcel A would be deferred until Phase IB.

Phase IA is proposed to begin as soon as reasonably possible. Phase IA would continue to have an approximately 18-month to 24-month timeframe during which approximately 18 months of active construction activities would be on-going. The only differences between what was previously proposed are that all construction would be limited to Parcel A and certain elements of the Upper School (i.e., northwest most multi-purpose field and Performing Arts Center) would be deferred to Phase IB. The commencement of Phase IB would be deferred for no more than seven years after the completion of Phase IA. Phase IB would have an approximately 18-20 month duration, during which approximately 16 months

would have active construction. During the time when major active construction is not occurring, the Upper School site would be landscaped and there would be no open disturbed areas. There would be no prolonged storage of construction materials or equipment except for potential temporary storage of delivered materials (most of which would be stored indoors) for any minor construction activity that might occur within the buildings. Any minor outdoor construction activity that may require equipment or material storage would be completed within a short duration and would involve equipment and activities similar to landscaping work.

2. CONSTRUCTION PHASING PLAN (FINDING N-2)

The following Construction Phasing Plan and logistics diagrams have been developed consistent with the requirement of Finding N-2 as well as other Findings relating to specific construction activities. The document "Findings for Construction Management Plans" is attached as **Appendix C**. FASNY intends to develop the proposed Upper School with the following sequence of activity. Note that certain sub-phases of construction activity overlap in timing and that references to weeks of construction are relative to the overall start of construction and take into account restrictions on certain activities based on season.

The logistics diagrams graphically depict:

- Designated Storage Areas
- Construction Worker Parking Plan
- Anti-tracking Pads for Soils Control
- Construction Entrances and Exits for Deliveries and Workers
- Athletic Field Grading and Seeding
- Phased Construction of the Gym Addition and the Performing Arts Center
- School Circulation during Future Phased Construction

2.1. PHASE I-A: UPPER SCHOOL AND GYMNASIUM

- **Weeks 1-8:** Job Setup: Silt Fence, Hay Bales, Construction Fence, Temporary Tradesmen Parking Lot, Abatement & Demolition of Existing Clubhouse.
- **Weeks 9-12:** Excavation, Foundations, Steel, Site Utilities, and Temporary Sediment Basin.
- **Weeks 13-19:** Foundations, Steel, Site Utilities, Reroute Sanitary Main, Grade & Seed West Field, Bike Path
- **Weeks 20-26:** Building Enclosure, MEP Rough-in, Site Utilities/Stormwater Management System.
- **Weeks 27-45:** Interior Partitions, MEP Rough-in, North Parking Lot Grade & Binder.
- **Weeks 46-60:** Interior Fit-out, East Parking Lot Grade & Binder.
- **Weeks 61-78**: Building Finishes, Greenhouse Hardscape, East Field Grade & Turf, Track,Tennis Courts.
- **Weeks 79-87**: Building Occupancy, Landscaping & Commissioning

2.2. PHASE I-B: PERFORMING ARTS CENTER, THIRD BASKETBALL AND SQUASH COURTS, ATHLETIC SHED

- **Weeks 1-4:** Job Setup and Mobilization: Silt Fence, Hay Bales, Construction Fence, Temporary Tradesman Parking Lot, Excavation
- **Weeks 5-34:** Foundations, Steel, Building Enclosure, Grade & Seed North Athletic Field.
- **Weeks 35-68:** Fit-out, Finishes, Hardscape, Landscape, Softball/Baseball Infield, and Occupancy.

3. CONSTRUCTION LOGISTICS AND SPECIFICATIONS (N-6, N-7)

3.1. HOURS OF CONSTRUCTION ACTIVITIES (N-6, N-7)

a. Construction activities will be conducted in compliance with the City of White Plains Municipal Code, Chapter 3-4, "Noise Pollution" (Section 3-4-2(b)(5)), which states that construction activities shall occur only between the hours of 7:00 AM and 7:00 PM on weekdays, and between the hours of 9:00 AM and 7:00 PM on Saturdays, Sundays, and legal holidays. See **Appendix A**, White Plains New York, Code of Ordinances Chapter 3-4, "Noise Pollution").

b. Although Municipal Code, Chapter 3-4-2(b)(7), allows for loading and unloading of vehicles between 8:00 AM and 10:00 PM on any day of the week, hours of delivery will be limited to the allowed hours of construction activity: 8:00 AM to 7:00 PM on weekdays, and 9:00 AM to 7:00 PM on Saturdays, or per the peak hour traffic restrictions noted in section 3.15h of this document.

c. It is expected that the typical work week will be from 7:00 AM to 5:00 PM Monday through Friday, and Saturdays from 9:00 AM to 4:00 PM, to compensate for weather delays or to expedite certain tasks.

d. Workers will be arriving and departing shortly before and after construction start and construction end times.

e. Based on current estimates, current manpower projections show a peak of 120 workers, five fewer than was estimated with the Original Plan.

3.2. CONSTRUCTION WORKER PARKING & MATERIAL STORAGE (N-7, N-14, N-15, N-18, N-20, N-21)

a. Construction workers will park in designated on-site worker parking areas as shown in the Construction Phasing Logistics Plans included as part of this Construction Management Plan. There shall be no construction worker parking on local streets.

b. Loading and unloading of materials will be in designated staging areas on-site as shown in the Construction Phasing Logistics Plans, typically adjacent to or directly into the area of construction.

c. On-site worker parking areas and material storage and laydown areas shall be located a minimum of 75 feet from the property line of any adjacent residential property and public rights-of-way and shall be suitably screened with a berm or construction fencing with fabric screens to prevent headlights from shining into neighboring property. The existing parking lot at the intersection of Hathaway Lane and Ridgeway may be used for construction worker parking and material storage but shall be screened from the adjacent residential property with construction fencing and fabric screens.

3.3. ACCESS TO CONSTRUCTION SITE (N-7, N-15, N-21)

a. Delivery and driving directions will be distributed to all contractors and delivery trucks accessing the site. Deliveries from I-287 Eastbound will use Exit #8E Westchester Avenue to White Plains Avenue to Route 127/North Street to Ridgeway and turn into the project site on Hathaway Lane. Deliveries from I-287 Westbound will use Exit #9N-S merging onto Westchester Avenue to Bryant Avenue to Route 127/North Street to Ridgeway and turn into the project site on Hathaway Lane.

b. Large construction vehicles would be instructed to use I-287 for all access to the Project Site. Since the northbound right-turn from Mamaroneck Avenue to Ridgeway is difficult for large vehicles, contractors will be told to avoid this turn to the maximum extent practicable. Some construction vehicles, including construction workers, would be allowed to approach the Project Site from this direction.

c. Vehicles shall not utilize the local residential streets (including that portion of Hathaway Lane north of the southern edge of 57 Hathaway Lane, Gedney Esplanade, Oxford Road, Heatherbloom Road, Heather Lane, Robinhood Road, Little John Place, Sherman Avenue, Burling Avenue, Gedney Park Drive, Gedney Esplanade, Hotel Drive, Murchison Place, Seymour Place, or Dupont Avenue).

d. Public access between Ridgeway and Gedney Esplanade on Hathaway Lane will continue to be provided during all phases of construction.

3.4. MEASURES TO ENSURE THE SAFETY OF PEDESTRIANS (N-3, N-9, N-20)

a. There are no public sidewalks at the entrance points at Ridgeway and Hathaway Lane. Therefore sidewalk closings and pedestrian diversions are not anticipated to be required. In the event that sidewalk closings are required, the plan would be reviewed and approved by the City of White Plains Departments of Public Works and Public Safety prior to implementation.

b. For public safety, during Phase I, the entire perimeter of the Project Site will be posted as closed to the public. Signage will be posted at 200 foot intervals at the project perimeter, as well as posted at 100 foot intervals on the construction fencing, and posted on the construction gates.

3.5. CONTROLS ON FUGITIVE DUST & EROSION AND SEDIMENTATION (N-2, N-3, N-10, N-11, N-12)

a. Requirements for soils management and dust control are included in the Erosion and Sediment Control Plan (ESCP) within the "Stormwater Pollution Prevention Plan (SWPPP)" of the Alternative Site Plan Application, which is included by reference in this Amended CMP.

b. Erosion and sediment control measures include spraying water on dusty surfaces at least twice a day, stabilizing soils with temporary grass seed mixtures, seeding or using erosion control blankets to stabilize soil stockpiles, and using drainage diversion methods (silt fences, hay bales) to minimize soil erosion during site grading. This plan for the protection of adjacent properties must prove satisfactory to the Commissioner of Buildings, Commissioner of Public Works and the Environmental Officer prior to the commencement of construction. FASNY and its Construction Manager will ensure compliance with this requirement through its contracting procedures.

c. Fugitive dust will be closely monitored and controlled. All contractors disturbing soil will have a certificated trained individual who must be present on-site during all soil disturbing activities.

d. Buffalo Turbine Monsoon Complete Dust Control Suppression units will be used for spot control of dust as needed.

e. Any disturbed area or stockpile area remaining at the end of Phase I will be fully stabilized in accordance with the Erosion and Sediment Control Plan (ESCP) in the "Stormwater Pollution Prevention Plan (SWPPP)," included in the Alternative Site Plan Application.

3.6. STORMWATER POLLUTION PREVENTION PLAN (N-2, N-4, N-9, N-10, N-11)

a. A Storm Water Pollution Prevention Plan (SWPPP), approved by the Commissioner of Public Works on {DATE}, which includes an Erosion and Sediment Control Plan (ECSP), has been established for the Project and is included in this Amended CMP by reference. (See "Stormwater Pollution Prevention Plan (SWPPP)," included as part of the Alternative Site Plan Application.) It will be implemented at the start of construction and continue throughout each phase of construction on this site.

b. Storm water pollution prevention measures include the use of silt fence, hay bales, interceptor swales, stabilized construction entrance, temporary seeding, mulching, inlet protection (silt sacks), erosion control matting, sediment basins, and stone check dams.

c. As part of the requirements of the SWPPP, a weekly inspection and maintenance program will be implemented to properly manage sediment transport and erosion control during each phase of construction and throughout the useful life of the Project. FASNY's Construction Manager will also conduct inspections and maintain a log of the control devices during and/or immediately after any adverse weather events, and any necessary repairs or replacement of the erosion and sediment control practices will be addressed within a 24 hour period following a storm event.

d. The SWPPP identifies site restoration measures that would have to be implemented by FASNY should construction activity cease for any period exceeding 2 weeks. The site restoration plan also identifies the establishment of a site restoration bond in an amount established by the City to cover the cost to regrade and replant any disturbed areas.

e. The City may retain a licensed professional to monitor soil disturbance and stormwater impacts under the Supervision of the Commissioner of Public Works, with funding from the inspection fees paid by FASNY.

3.7. CONTROLS ON OFF-SITE TRACKING OF MUD

a. Soil management is the most important step in preventing mud tracking onto public streets. All construction roads that disturb earth will be capped with stone, process or pavement, to minimize mud pick-up by truck or vehicle tires. Soil stabilization will be implemented as specified in the Stormwater Pollution Prevention Plan. Anti-tracking pads will be installed and maintained at all construction exits to dislodge any mud from the truck tires before they exit the site, as shown on the Construction Phasing Logistics Plans.

b. Street sweeping of the paved access drives and public roads for 100 feet on either side of all construction entrance/exits will be performed weekly for the duration of the project, and more frequently if material is tracked off site, at FASNY's expense.

c. Street sweeping will be accomplished with vehicle mounted sweeping equipment, such as a box broom sweeper attachment on a skid steer, or a mechanical sweeper as manufactured by Elgin, Tymco, or others.

d. All concrete trucks will complete a tire wash-down before leaving the construction zone on the site.

3.8. NOISE MITIGATION (N-6, N-7, N-8)

a. All construction activities will be conducted in full compliance with existing regulations (Municipal Code, Chapter 3-4, "Noise Pollution"), including the municipal time restrictions for construction work. See **Appendix A**, White Plains New York, Code of Ordinances Chapter 3-4, "Noise Pollution").

b. Property owners within 200 feet of the Property will receive prior notice of any extraordinary noise (e.g., blasting [none is anticipated], rock chipping) that might occur for more than one day. FASNY and its contractors must follow Municipal Code blasting protocol (Section 7-3-60) and Department of Public Safety blasting protocol, which are incorporated herein by reference.

c. The internal combustion engine-powered construction equipment used in the construction of the Project will be limited to late model (1998 and newer) so as to take advantage of the cleaner burning engines. Also, these off-road pieces of equipment will have better sound attenuation properties. Exceptions to this are subject to the approval of the Commissioner of Building upon a demonstration that it is not feasible or practicable to obtain the required equipment. Unless an exception is granted by the Commissioner of Building, no engines are to be used unless "critical" level exhaust silencers are fitted.

d. Variable volume back-up alarms, instead of the traditional "beeping" back up alarms, will be provided for all on-site vehicles.

e. Truckers will be notified that the use of engine "jake" braking is not allowed within the City of White Plains, nor anywhere near or on the project site, to help mitigate noise disturbance to the neighbors.

f. FASNY will locate all construction staging, materials storage, and parking for construction workers at least 75 feet from abutting residential properties.

g. At least the following construction equipment will be required for the construction of the project: excavators, bulldozers, backhoes, graders and dump trucks.

h. Delivery trucks and/or other construction equipment engines will not be permitted to remain idling during unloading or other inactive times. This will be enforced by on-site project staff, and fines will be issued for non-compliance.

3.9. PEST CONTROL (N-13)

a. Pest control measures will be employed as required, using tamper-resistant rat bait stations, particularly with regard to excavation and demolition of existing structures. The work will be performed in accordance with all applicable requirements of the City of White Plains.

b. Prior to demolition of the existing structures, FASNY will retain a pest control company to establish a protocol for addressing rodent and pest problems, and to monitor conditions on the Project Site and adjacent properties throughout the phases of construction.

3.10. SITE SECURITY (N-2, N-9)

a. A chain-link construction fence will be installed as shown on the Construction Phasing Logistics Plans. The gates will be locked, except during designated working hours. The fence will be relocated from time to time to accommodate changes in the areas under construction.

b. The existing chain-link fence around the perimeter of the site will be repaired or replaced as required and the property will be posted to prevent trespassing onto FASNY property.

c. Signage will be posted on the gates requiring all visitors to report to FASNY's Construction Manager's trailer before proceeding onto the site.

d. 24/7 emergency contact information will be posted on the construction gates.

e. Employees of FASNY's Construction Manager will be on-site whenever work is being performed.

f. For public safety, during Phase I the entire perimeter of the project site will be posted as closed to the public. Signage will be posted at 200 foot intervals at the project perimeter, as well as posted at 100 foot intervals on the construction fencing, and posted on the construction gates.

g. The Amended CMP and contact numbers for FASNY representatives and construction manager representative shall be posted in easily accessible location on-site and on FASNY's website.

h. FASNY shall make copies of the Construction Management Plan available to the residents on-line and it shall be posted to the City's website. A hard copy of the Construction Management Plan for each phase shall be maintained in the construction office on-site. Further, FANSY shall provide one or more methods for communication to a responsible person(s) (e.g. telephone number, e-mail address) for use by neighbors and/or the City of White Plains to communicate any concerns or observations during the construction period.

3.11. OFF-ROAD VEHICLES; ULTRA-LOW SULFUR DIESEL FUEL AND GREENHOUSE GAS EMISSIONS REDUCTION PLAN (K-12, N-3, N-7, N-8)

a. Localized increases in mobile source emissions will be minimized by using ultra-low sulfur diesel fuel for all on-site construction equipment and delivery trucks.

b. Delivery trucks and/or other construction equipment engines will not be permitted to remain idling during unloading or other inactive times. This will be enforced by on-site project staff, and fines will be issued for non-compliance.

c. The internal combustion engine-powered construction equipment used in the construction of the Project will be limited to late model (1998 and newer) so as to take advantage of the cleaner burning engines. Also, these off-road pieces of equipment will have better sound attenuation properties. Exceptions to this are subject to the approval of the Commissioner of Building upon a demonstration that it is not feasible or practicable to obtain the required equipment. Unless an exception is granted by the Commissioner of Building, no engines are to be used unless "critical" level exhaust silencers are fitted.

d. All non-road vehicles over 50HP used with regard to the Project are to utilize the best technology available for reducing the emission of pollutants, including, but not limited to, retrofitting such non-road vehicles with oxidation catalysts, particulate filters, and/or technology with comparable or better effectiveness. All construction equipment will include PM2.5 emission controls.

e. Truckers will be notified that the use of engine “jake” braking is not allowed within the City of White Plains, nor anywhere near or on the project site.

f. It is expected that compliance with these specifications will minimize on-site generation of emissions to the maximum extent practicable and that air quality monitoring would not be required by the City to demonstrate compliance. Should air quality monitoring become a requirement, the expense of such will be paid for by FASNY.

g. At least the following construction equipment will be required for the construction of the project: excavators, bulldozers, backhoes, graders and dump trucks.

3.12. MANAGEMENT OF HAZARDOUS MATERIALS (M-1, M-2, M-3, M-4, N-3, N-4)

a. All pesticides, fertilizers, petrochemicals, construction chemicals such as concrete products, sealers and paints will be managed as detailed in the SWPPP (see “Construction Site Chemical Control”).

b. Concrete washouts will be used to contain concrete and liquids when the chutes of mixers and hoppers of concrete pumps are rinsed out after deliveries. All concrete washouts shall be constructed and maintained as detailed in the SWPPP (see “Concrete Material and Equipment Management”).

c. FASNY shall have the responsibility for implementation of the CHASP (Construction Health and Environmental Safety Plan), including sampling and monitoring, and the cost of supervision by licensed professionals.

d. If the City does not have adequate staffing to ensure full oversight of soil disturbance activities, necessary licensed professional(s) may be hired to assist the City in such oversight, funded by the inspection fees paid by FASNY.

3.13. CONSTRUCTION PHASE ENVIRONMENTAL HEALTH AND SAFETY PLAN (CHASP) (N-2, N-3)

a. The Construction Phase Environmental Health and Safety Plan (CHASP) is attached hereto as **Appendix B**.

b. Should contaminated soils be found on site, protocols consistent with applicable rules and regulations and as approved by the Department of Public Works, and as outlined in the CHASP (Construction Health and Environmental Safety Plan), will be followed for the removal and disposal of contaminated soil. Air monitoring will be implemented if required by the CHASP.

c. All fill being brought to the Project Site must be tested and test results reviewed and approved by the Commissioner of Public Works before the fill is placed on the Project Site. FASNY would be required to pay the cost of the appropriate testing and evaluation procedures regarding soil and fill brought to the Project Site.

3.14. CONSTRUCTION TRAFFIC MANAGEMENT PLAN (N-19, N-20, N-21)

a. Based on current estimates, current manpower projections show a peak of 120 workers.

b. Workers will be arriving and departing shortly before and after construction start and construction end times. It is expected that the typical work week will be from 7:00 AM to 5:00 PM Monday through Friday, and Saturdays from 9:00 AM to 4:00 PM, to compensate for weather delays or to expedite certain tasks.

c. While most construction workers would arrive prior to the AM commuter peak hour, there may be some overlap of construction traffic with commuter traffic in either the AM or PM peak hours. It is not anticipated that this would create any impacts on local street operations.

d. Delivery and driving directions will be distributed showing routing on roads as previously identified in the Final Environmental Impact Study. Deliveries from I-287 Eastbound will use Exit #8E Westchester Avenue to White Plains Avenue to Route 127/North Street to Ridgeway and turn into the project site on Hathaway Lane. Deliveries from I-287 Westbound will use Exit #9N-S merging onto Westchester Avenue to Bryant Avenue to Route 127/North Street to Ridgeway and turn into the project site on Hathaway Lane.

e. Large construction vehicles would be instructed to use I-287 for all access to the Project Site. Since the northbound right-turn from Mamaroneck Avenue to Ridgeway is difficult for large vehicles, contractors will be told to avoid this turn to the maximum extent practicable. To avoid conflict with vehicular and pedestrian traffic accessing Ridgeway Elementary School, all heavy truck traffic will be prohibited from using Mamaroneck Avenue between Bryant Avenue and the Hutchinson River Parkway. Some construction vehicles, including construction workers, would be allowed to approach the Project Site from this direction.

f. Vehicles shall not utilize the local residential streets (including that portion of Hathaway Lane north of the southern edge of 57 Hathaway Lane, Gedney Esplanade, Oxford Road, Heatherbloom Road, Heather Lane, Robinhood Road, Little John Place, Sherman Avenue, Burling Avenue, Gedney Park Drive, Gedney Esplanade, Hotel Drive, Murchison Place, Seymour Place, or Dupont Avenue).

g. Construction vehicles will use Ridgeway and the southern part of Hathaway Lane to access the Project Site during the phases of construction as shown on the Construction Phasing Logistics Plans.

h. Restrictions on Deliveries

Due to the proximity of the Project to White Plains High School, no major deliveries (two or more trucks) will be permitted during morning bus drop off (7:25 to 7:55 AM) and afternoon bus pick-up (2:15 to 2:45 PM), during the school year. Times to be coordinated with and confirmed by WPHS Administration.

3.15. SITE RESTORATION PLAN (N-2)

a. If construction is halted for any reason for a period exceeding 2 weeks, the SWPPP identifies stabilization measures that will be implemented by FASNY to restore the site.

b. The measures required to stabilize or restore the site, as defined in the SWPPP, will be dependent on the specific phase of construction and the type of condition (e.g., slope or pile) that needs to be addressed.

c. A Site Restoration Bond, in an amount established by the City, will be available to cover the cost to regrade and replant any disturbed areas, should a deficiency be identified and FASNY not respond or have the means to make the necessary corrections during a phase of construction or between the phases of construction.

4. PUBLIC OUTREACH (N-9)

This Amended Construction Management Plan (CMP) has been developed to outline the specific practices that FASNY and its general contractor would follow to avoid, minimize, or mitigate construction-period impacts to adjoining residences to the maximum extent practicable. Consistent with Finding N-9, the following measures will be taken to inform property owners within 200 feet of the Project Site of activities on the Site.

a. After approval of the Amended CMP, and prior to the issuance of any building or excavation permits, FASNY and its construction management team shall meet with the appropriately designated City staff along with any professionals retained by the City to assist in the monitoring of construction activities, to review the Amended CMP and all plans contained therein and required as a part thereof, to ensure that all responsible parties understand their responsibilities under the Amended CMP for each specific construction phase.

b. After approval of the Amended CMP, and after the coordination meeting(s) with FASNY and its construction management team, FASNY and its construction management team, along with the appropriately designated City staff and/or consultants who will be involved in the monitoring of the construction of the Project, shall hold an informational meeting open to residents living within 200 feet of the Project Site to describe the construction process for the specified construction phase.

c. FASNY shall make copies of the Amended CMP available to the residents on-line and it shall be posted on the City's website. A hard copy of the Amended CMP for each phase shall be maintained in the on-site construction office.

d. The Amended CMP may be updated as necessary, consistent with the City's Construction Management Protocol.

e. FASNY shall identify a construction liaison to whom questions or concerns may be communicated by residents or City staff. A telephone number and e-mail address shall be provided for the liaison and posted on FASNY's website. Contact information for the liaison shall be posted on the Project Site in a location visible and accessible without entering the construction zone. FASNY shall share any communications received by the liaison with the City of White Plains and shall coordinate with the City of White Plains on the appropriate response to the issue(s) raised.

f. FASNY shall work with the City of White Plains and surrounding neighborhood associations to schedule periodic meetings to inform the neighbors of scheduled Project construction and anticipated neighborhood impacts. Meetings may be scheduled according to specific milestones or anticipated changes in construction activity within each construction phase. These meetings would provide on-going information about the status of construction activities and the anticipated schedule of construction activities.

g. The City may retain a building construction supervisor working under the direction of the Commissioner of Building and a licensed professional to monitor soil disturbance and Stormwater impacts under the supervision of the Commissioner of Public Works, with funding from the inspection fees paid by FASNY.

5. ENFORCEMENT

FASNY will enforce all provisions of this Amended CMP through a schedule of fines that will be included in all contract documents with contractors and sub-contractors. This practice is a common method of enforcement on construction sites.

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Appendix A
City of White Plains Noise Pollution Ordinance

ARTICLE I. IN GENERAL

APPENDIX A

Sec. 3-4-1. Legislative determinations.

As a legislative determination it is found and declared that:

(a) The making and creation of loud, unnecessary and unusual noises within the limits of the city is a condition which has existed for some time and the extent and volume of such noises is increasing.

(b) The making, creation, and maintenance of loud, unnecessary, unnatural, or unusual noises which are prolonged, unusual or unnatural in their time, place, or use, do affect and are a detriment to public health, comfort, convenience, safety, welfare or prosperity of the residents and persons within the city.

(c) The necessity in the public interest for the provisions and prohibition hereinafter contained and enacted is declared as a matter of legislative determination and public policy, and it is further declared that the provisions and prohibitions hereinafter contained and enacted are in pursuance of and for the purpose of securing and promoting the public health, comfort, convenience, safety, welfare and prosperity and the peace and quiet of the city and its inhabitants and persons within its limits.

(Ord. of 6-19-67, § 1)

Sec. 3-4-2. Prohibitions; enumerations of restricted noise.

(a) It shall be unlawful for any person to make, permit, allow, continue or cause to be made or continued any excessive, unnecessary or unusual noise or any loud noise within the limits of the city.

(b) The following acts, among others, are determined and declared to be loud, disturbing, and unnecessary noises in violation of this article, namely:

(1) The using, playing or operating or permitting to be played, used or operated any receiving or playing radio set, television set, musical instrument, phonograph recording or playing device, or other machine or device for the producing or reproducing of sound, in such manner or volume as to disturb the peace, quiet, and comfort of the neighboring inhabitants or occupants, or at any time with louder volume than is necessary for convenient, normal hearing by the person or persons who are in the room or enclosure or place in which such equipment or device is operated and who are involuntary listeners thereto. The operation of any such set, instrument, phonograph, machine or device between the hours of 11:00 p.m. and 7:00 a.m. in such a manner as to be distinctly

audible to persons with normal hearing at a distance of fifty (50) feet from the room or building or structure in which it is located shall be prima facie evidence of a violation of this section.

(2) The playing, using, or operating or permitting to be played, used or operated any radio receiving set, television set, musical instrument, phonograph, loud speaker, sound amplifier or any other machine or device or equipment for the producing or reproducing of voices or sound, which is directed to or cast or audible upon the public streets, for the purpose of commercial or business advertising or attracting the attention of the public or persons passing by to any abutting or nearby building or structure or place or any commercial or public operation conducted therein or thereon.

(3) Yelling, shouting, hooting, whistling, or singing on the public streets, parks or places, or a place of business or other establishment open to the public, particularly between the hours of 10:00 p.m. and 7:00 a.m., or at any time or place so as to annoy or disturb the quiet, comfort, repose, health, or peace of the neighboring inhabitants or occupants in any place of work or in any dwelling, hotel, or other residence, or of other persons in the vicinity of such acts. Yelling, shouting, hooting, whistling, or singing clearly audible at a distance of fifty (50) feet from the source of the noise shall be prima facie evidence of a violation of this section.

(4) The keeping of any animal, bird or insect which, by causing frequent or continued loud noise or noises, shall unreasonably disturb the peace, comfort, or repose of neighboring inhabitants or occupants. Animal, bird or insect noises clearly audible at a distance of fifty (50) feet from the source of the noise shall be prima facie evidence of a violation of this section.

(5) The erection, construction (including excavating), demolition, alteration or repair of any building or structure, other than between the hours of 7:00 a.m. and 7:00 p.m. on any day of the week and other than between the hours of 9:00 a.m. and 7:00 p.m. on Saturdays, Sundays and legal holidays, except in case of urgent necessity in the interest of public health and safety, and then only with a permit from the commissioner of building, which permit may be granted for a period not to exceed three (3) days or less while the emergency continues. If the commissioner of building or commissioner of public works should determine that the public health and safety will not be seriously impaired by excavation, or the erection, construction, demolition, alteration or repair of any building or structure, or the construction or repair of streets and highways, within the hours of 7:00 p.m. and the following 7:00 a.m., and if either shall further determine that substantial loss or great inconvenience would result to any party in interest by requiring work to be limited to the daytime hours, he may grant permission for such work under his jurisdiction to be done within specified hours between 7:00 p.m. and the following 7:00 a.m., upon application being made when the permit is issued or during the progress of the work.

(6) The creation of any excessive or unnecessary noise on any street adjacent to any school, institution of learning, public library, church or courthouse while the same are in use, or adjacent to any hospital, which noise unreasonably interferes with the proceedings or workings of such school, institution, church or courthouse, or which disturbs or annoys patients and employees in the hospital provided conspicuous signs are displayed on such streets indicating that the same is a school, institution, public library, church, courthouse, or hospital zone.

(7) The operation of any machinery, commercial motor vehicle, refrigerator unit on trucks, equipment, pump, exhaust fan, attic fan, air-conditioning apparatus, snow plows or blowers, or similar mechanical device, loading or unloading of vehicles, or use of any instrument in such a manner or with such volume as to annoy or disturb the quiet,

comfort or repose of neighboring inhabitant or occupant, in any dwelling, hotel, or other type of residence between the hours of 10:00 p.m. and 8:00 a.m. on any day of the week. Such noise being clearly audible at any neighboring dwelling, hotel or other type of residence shall be prima facie evidence of a violation of this section. This paragraph shall not apply to municipal vehicles. Notwithstanding the foregoing, any public utility company operating and maintaining parking facilities for its employees in the city may operate snow plows or blowers to clear snow from such parking facility at hours other than those specified above by obtaining permission therefor from the department of public safety. The request for such permission shall specify the hour at which such operation is desired and shall be made to the commissioner during business hours and at other times to the police desk officer then on duty at police headquarters. The commissioner or such officer may grant such permission if he determines, upon consultation with the department of public works, that snow conditions and accumulations or projected accumulations require such operation at the hours requested. Any request and the disposition thereof shall be recorded on forms provided by the commissioner or on the log of such police desk officer.

(a) It shall be unlawful for any person in the operation of any air-conditioning equipment or part thereof, or any other type of mechanical equipment or apparatus installed on or attached to premises, to make, continue or cause to be made, excessive noise so as to cause annoyance, inconvenience or detriment to the public or to any person or persons. Noise shall be considered excessive if the sound level from the air-conditioning unit or any other type of mechanical equipment or apparatus installed on or attached to premises exceeds fifty-five (55) decibels as measured on the A, B or C scale of a General Radio Company type 1565-A level meter or American Standard Association approved equivalent, when the meter is located at a point not nearer than the property line nearest such air-conditioning unit, mechanical equipment or apparatus, nor nearer than fifteen (15) feet where air-conditioning unit, mechanical equipment or apparatus is measured within the same property. A decibel is the standard unit of sound level measurement. The requirements of this subsection shall not apply to emergency generators installed to operate the life safety systems (e.g. smoke/fire alarms, elevators, smoke purge systems, emergency lighting, etc.) of a building. The noise from such equipment shall not exceed a sound level of sixty-five (65) decibels as measured on the A, B or C scales. In addition, such equipment shall only be permitted to be exercised between the hours of 7:00 a.m. and 7:00 p.m. on any day of the week, and between the hours of 9:00 a.m. and 7:00 p.m. on Saturdays, Sundays and legal holidays, except in case of urgent necessity in the interest of public health and safety, and then only with the permission of the commissioner of building.

(b) If, as a result of a test, the air-conditioning equipment, mechanical equipment or apparatus installed on or attached to premises is found to violate the terms of this chapter, the operation of said equipment or apparatus shall be discontinued immediately and not resume unless proper corrections have been made and approved by the building department.

(8) (a) The operation of any manually or electrically powered landscape maintenance equipment, such as lawn mowers, leaf blowers, chain saws and trimmers between the hours of 9:00 p.m. and 8:00 a.m. on weekdays, and between the hours of 9:00 p.m. and 9:00 a.m. on Saturdays, Sundays and legal holidays. This subdivision shall not apply to municipal equipment in the event of an emergency.

(b) (i) The operation of all gasoline powered landscape maintenance equipment,

such as leaf blowers, lawn mowers, chain saws and trimmers, between the hours of 6:00 p.m. and 8:00 a.m. on weekdays, and between the hours of 6:00 p.m. and 10:00 a.m. on Saturday, Sundays and holidays, except grass may be cut with an internal combustion engine lawn mower by an occupant of the premises where it is being cut on weekdays between the hours of 6:00 p.m. and 8:00 p.m.;

(ii) The operation of any gasoline powered landscape maintenance equipment, such as leaf blowers, lawn mowers, chain saws and trimmers, without factory installed noise reduction equipment in good working condition;

(iii) The operation of any gasoline powered landscape maintenance equipment, other than leaf blowers, such as lawn mowers, chain saws and trimmers that produce a sound level exceeding eighty-five (85) decibels on the "A" weighted scale at a distance of fifty (50) feet; or the operation of any gasoline powered leaf blowers that produce a sound level exceeding seventy (70) decibels on the "A" weighted scale at a distance of fifty (50) feet;

(iv) The simultaneous operation of more than one gasoline powered leaf blower on property of five thousand (5,000) square feet or less in area;

(v) The operation of gasoline powered leaf blowers during the period May 15 through September 30; and between December 16 through March 14;

(vi) All the aforementioned restrictions and prohibitions on said gasoline powered landscape maintenance equipment may be waived by the commissioner of public safety in the wake of a storm or other emergency.

(9) The sounding of any horn, bell, or any other noise producing signal or device or apparatus on or in any motor vehicle, motorcycle, bus, or any other vehicle, or the unnecessary racing of the motors thereof, in or upon any public street or place in the city while parked or at a standstill, except as a necessary warning of emergency or of impending danger, or the creation by any means of any unreasonable loud or harsh or annoying and disturbing sound in any such public street or public place in this city, or the sounding of any such device or signal apparatus for an unnecessary or unreasonable period of time, or while traffic is for any reason at a standstill, except as a necessary emergency warning of impending danger.

(Ord. of 5-7-13, § 2)

Editor's note—

Sections 1 and 2 of an ordinance adopted May 7, 2013, effective June 1, 2013, repealed the former § 3-4-2, and enacted a new § 3-4-2 as set out herein. The former § 3-4-3 pertained to loud, unnecessary or unusual noises prohibited and derived from Ord. of 6-19-67, § 3.

Sec. 3-4-3. Reserved.

Editor's note—

Section 1 of an ordinance adopted May 7, 2013, effective June 1, 2013, repealed § 3-4-3, which pertained to illustrative enumeration and derived from Ord. of 6-19-67, § 4; Ord. of 4-7-69; § 1; Ord. of 5-7-70; Ord. of 11-19-73, § 1; Ord. of 9-3-74, § 1; Ord. of 4-5-75, § 1; Ord. of 12-16-85, § 1; Ord. of 7-5-94, § 1; Ord. of 5-1-95, § 1; Ord. of 8-1-11, § 1.

Sec. 3-4-4. Commercial or business sound devices.

It shall be unlawful for any person to use or operate any sound device or apparatus in, on, near or adjacent to any public street, park or place for any commercial or business advertising purposes.

(Ord. of 6-19-67, § 5)

Sec. 3-4-5. Exemption.

The chapter shall not be construed to prohibit:

(a) The use of radio or television or amplifying devices for the purpose of reporting unusual national, state or municipal events, or unusual sporting or other events of great public interest, during reasonable time and hours, in connection with events such as presidential or gubernatorial elections, inaugurations or similar events of great public interest; nor

(b) The necessary warning sounds of police, fire, civil defense, or ambulance vehicles or other emergency warnings by public authorities; nor

(c) The use or operation of any organ, radio, bell, chimes or other similar instrument, apparatus or device by any church, synagogue or school on or within its own premises, in connection with religious rites or ceremonies of such church or synagogue or in connection with schools' educational program.

(Ord. of 6-19-97, § 7)

Sec. 3-4-6. Penalty.

Any person who violates any provision of this chapter shall be deemed guilty of an offense, and upon conviction thereof shall be fined not exceeding two hundred fifty dollars ($250.00), or may be imprisoned for not more than fifteen (15) days or both.

(Ord. of 6-19-97, § 8; Ord. of 5-3-93; Ord. of 4-3-00, § 1)
Charter reference— *Penalties for violations of ordinances, § 37.*

Secs. 3-4-7—3-4-15. Reserved.

Appendix B
Construction Health and Safety Plan (CHASP)

Former Ridgeway Country Club
White Plains, New York
Parcel A

Construction Health and Safety Plan

AKRF Project Number: 40437

Prepared for:

French-American School of New York
525 Fenimore Road
Mamaroneck, NY 10543

Prepared by:

AKRF, Inc.
34 South Broadway
White Plains, NY 10016
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OCTOBER 2016

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1.0 PURPOSE AND APPLICABILITY

The purpose of this Construction Phase Environmental Health and Safety Plan (CHASP) is to address the remediation of known or potential subsurface environmental conditions that may be encountered during construction and development activities, assign responsibilities, establish personnel protection standards and mandatory safety practices and procedures, and provide for contingencies that may arise during construction at the project site. The CHASP is intended to minimize health and safety risks resulting from the known and potential presence of hazardous materials on the site.

This plan is not designed to address potential geotechnical, mechanical or structural safety concerns and not to supersede or replace any OSHA regulation and/or local and state construction codes or regulations.

Work subject to this CHASP shall be all construction activities that disturb the existing on-site soil/fill and existing structures. The contractors and their subcontractors involved in the construction project shall provide a copy of this CHASP to their employees whose work involves any potential exposure to the on-site chemical hazards, and shall complete all work in accordance with this CHASP.

Construction activities are limited to Parcel A. A project site location map is provided as Figure 1.

2.0 SITE BACKGROUND INFORMATION

2.1 Site Location

The subject site is one parcel of the former Ridgeway Country Club (RCC) and golf course located at 336 Ridgeway in White Plains, NY (SBL: 131.14-9-3), also known as Parcel A. The parcel has frontage on Ridgeway, Hathaway Lane, and Gedney Esplanade.

The Property was used as a portion of an 18-hole golf course, including a main Clubhouse and adjacent smaller Clubhouse, constructed in 1924 and renovated in 1998. The Property also includes ten tennis courts, driving range, swimming pool, numerous sand bunkers and 123 paved parking spaces.

The surrounding area included residential, commercial and institutional (school, hospital and church) buildings.

2.2 Subsurface Conditions

The surface topography varies greatly across the golf course. Based on reports compiled by the U.S. Geological Survey (White Plains and Glenville Quadrangles), the entire former RCC property lies at an elevation between 250 and 300 feet above the National Geodetic Vertical Datum of 1929 (an approximation of mean sea level). During AKRF's subsurface investigation conducted in 2010, a total of six soil borings were advanced on Parcel A[1] to depths between 6 and 20 feet below the surface. The approximate depth to drilling refusal, indicating potential bedrock, was observed in two of the six borings at depths between 6 and 10.5 feet below the surface. Groundwater was observed in four of the borings at depths ranging between 6 and 17.5 feet. Groundwater would be expected to follow topography towards the large pond on the eastern portion of the former RCC, and regional groundwater would be expected to flow generally in an easterly direction toward the Mamaroneck River, which is approximately 2,000 feet to the east. However, actual water table depth and groundwater flow direction can be affected by many factors including subsurface openings or obstructions such as basements, underground utilities, current or past pumping of groundwater, and other factors. Groundwater in White Plains is not

[1] AKRF's investigations covered all four parcels of the former Ridgeway Country Club. However, as construction is limited to Parcel A only, this CHASP only discusses those conditions found on Parcel A.

used as a source of potable water (the municipal water supply is drawn from the Kensico Reservoir).

2.3 Development

The French-American School of New York (FASNY) proposes to construct a new Middle School (Grades 6 to 8) and High School (Grades 9 to 12), together the "Upper School" on a portion of the former Ridgeway Country Club in the City of White Plains. The Site is currently improved with the Clubhouse for the former Ridgeway Country Club, an annex building, a pool, tennis courts, several parking lots and out-buildings.

Construction of the Proposed Project is expected to occur in two primary phases. Phase IA includes the Upper School buildings, driveways, parking areas, two athletic fields, running track, and all stormwater management practices. Phase IB elements are the third gym court; squash courts; Performing Arts Center; greenhouse classroom; northern grass field; softball/baseball field; athletic field shed; and land-banked parking spots (if needed).

The other parcels on which the former Ridgeway Country Club was located, known as Parcels B, C and D, are not part of the proposed development.

2.4 Previous Environmental Investigations

Ridgeway Country Club Phase I Environmental Site Assessment, AKRF, Inc., January 2011

A Phase I ESA of the entire RCC was conducted by AKRF in December 2010. The Phase I ESA included a visual inspection of the Site and the neighborhood and review of regulatory databases and historical land use maps.

The Phase I identified potential environmental concerns pertaining to past and present uses of the Site. Soil and groundwater beneath the Property may have been affected by historical pesticide use, underground storage tanks (USTs), and potential residual contamination from a closed gasoline spill on the Property. The Phase I recommended subsurface testing to assess the potential impact of these concerns, and future use of the Property as a private school. The following Recognized Environmental Concerns (RECs) were identified on Parcel A and were utilized to define the scope of this Phase II investigation[2]:

- The assessment found that the Property was undeveloped prior to 1924, at which time the current buildings and golf course were constructed. Pesticides and lawn maintenance chemicals have been used throughout the Property's history.
- A tank failure (NYSDEC Spill #0504600) was reported on the Property on July 18, 2005. The listing indicated that holes were discovered in a 1,000-gallon gasoline UST. The spill was reportedly remediated and closed as of January 3, 2006. The site contact indicated that the gasoline UST was removed in 2005, along with a diesel fuel aboveground storage tank (AST) and heating oil UST. During the reconnaissance, remnants of a former dispenser pad and a new patch of asphalt were observed at the location of the former gasoline UST outside the maintenance garage. Evidence of a new asphalt patch, east of the entry portico, was also observed in the reported area of the former heating oil UST. However, no records documenting removal and/or remediation of the former tanks were provided to AKRF.

[2] REC's on other Parcels are not discussed in this CHASP, as construction activity would be limited to Parcel A only.

- Various cleaning supplies were observed in storage rooms throughout the property. Approximately 40 one-gallon paint cans and eight five-gallon plastic buckets of sheetrock joint compound and sealant were observed in the storage room adjacent to the golf bag storage. The pool pump room contained empty plastic containers for chlorine other pool chemicals. Three 55-gallon drums of waste oil and one 30-gallon drum of degreaser were observed in the maintenance garage. Various maintenance equipment, including fertilizer sprayers, were located in the maintenance garage. Minor staining was noted in the maintenance garage. The maintenance garage drains emptied into a collection pit and effluent pipe with an unknown termination point.

Subsurface (Phase II) Investigation; Ridgeway Country Club, AKRF, Inc., January 2011

AKRF conducted a subsurface (Phase II) investigation at the RCC in December 2010 for Parcels A through D. The Phase II study was intended to determine whether past or present on- or off-site activities have adversely affected the subject property. The scope of the Phase II study was based on the findings of the Phase I Environmental Site Assessment (ESA) by AKRF, dated January 5, 2011.

The investigation included the collection of ten shallow soil samples and the advancement of six soil borings with the collection of six soil and two groundwater samples for laboratory analysis. Soil borings were advanced to depths ranging from 6 to 20 feet below grade surface (bgs). Groundwater was encountered at depths ranging from 6 to 17.5 feet bgs.

A low photoionization detector (PID) reading of 2 parts per million (ppm) and slight petroleum-like or organic odors were noted in boring GB-2 at 6 feet bgs, the location of a former gasoline underground storage tank (UST) and closed spill.

Results of the shallow soil sample analyses on Parcel A only[3] were as follows:

- RCRA 8 Metals were detected in each of the ten shallow soil samples. Mercury was detected in one of the samples (S1) at 2.2 ppm, below the 5.8 ppm SCO for mercury in the form of inorganic salts, as identified in the Technical Support Document for 6 NYCRR Part 375. No other metals were detected at concentrations exceeding their respective SCOs.
- Pesticides were detected in nine of the ten shallow samples. No pesticides were detected above their respective SCOs.

Results of the deeper soil sample analyses are as follows:

- Volatile organic compounds (VOCs) were detected in one (GB-2) of the six samples. All detected VOCs were at concentrations well below their respective SCOs. The compounds detected are typically associated with petroleum products. The boring GB-2 was located at the location of the historical gasoline UST. The VOC detections could be attributable to residual contamination from the historical gasoline spill and did not warrant additional investigation or remediation. Notwithstanding, any future disturbance in this area may require handling of affected soil as petroleum-contaminated waste.
- Semivolatile organic compounds (SVOCs) were detected in three (GB-2, GB-3, and GB-4) of the six soil samples. No SVOCs were detected at concentrations exceeding their

[3] This CHASP only includes discussion of the results of the Phase II investigation on Parcel A as no other parcel is subject to development under the current application.

respective SCOs. The SVOCs detected are polycyclic aromatic hydrocarbons (PAHs), compounds typically associated with petroleum products.

- Metals were detected in the soil sample. No metals were detected at concentrations exceeding their respective SCOs.
- No pesticides or PCBs were detected in the soil samples analyzed.

Results of the groundwater sample analyses are as follows:

- Twelve VOCs were detected in the two groundwater samples (GB-2-GW and GB-3-GW). Eleven of the twelve VOCs were detected at concentrations exceeding the respective Class GA standards in groundwater sample GB-2-GW. The detection of these compounds in the soil and groundwater at GB-2 likely reflect residual contamination due to the historical gasoline spill at that location.
- Fourteen SVOCs were detected in the two groundwater samples (GB-2-GW and GB-3-GW). Seven of the fourteen SVOCs were detected at concentrations exceeding their respective Class GA standards in GB-2-GW. One SVOC was detected above its Class GA standard in GB-3-GW. The detected SVOCs in groundwater, particularly GB-2-GW, may be the result of residual petroleum contamination from the former UST and reported spill in that area. The NYSDEC has closed the spill, thus indicating that no further action is required. In addition, as noted above, groundwater in White Plains is not used as a source of potable water. Finally, since groundwater samples for the SVOC analysis were not filtered, particles in the surrounding soil, agitated by the sampling process, may have become entrained in the groundwater samples resulting in concentrations being biased high.

Overall, the analytical data indicated that the low levels of VOCs and SVOCs in the soil and groundwater near the maintenance garage (Parcel A) did not warrant additional investigation or remediation. Mercury was detected in one of the samples (S1) at 2.2 ppm, below the 5.8 ppm SCO for mercury in the form of inorganic salts. Since mercury was only found in the shallow sample and not at depth, the likely source of mercury was from historical pesticide use.

Based on these conclusions, AKRF recommended preparation and implementation of a Construction-Phase Environmental Health and Safety Plan (CHASP) to manage disturbance of soil and a contingency plan to address sources or areas of contamination, if any, encountered, during future construction activities.

Asbestos, Limited Lead Paint and Limited PCB Caulk Inspection Report, AKRF, Inc. July 2014

Asbestos-containing materials (ACM) and limited polychlorinated biphenyls (PCB) caulk surveys were performed on the Main Clubhouse, the Main Barn, the Barn Annex/Garage, the Men's Locker Room, the Tennis Shack and Starter Shack, and a limited lead-containing paint (LCP) survey was performed on the Main Barn.

Floor tiles and associated mastics, plaster walls and ceiling, ceiling panels, duct breeching, ceramic tile set, pipe insulation, duct insulation, boiler insulation and roofing materials in the Main Clubhouse, Main Barn and Barn Annex were determined to be ACM. AKRF recommended that prior to building renovation or demolition, ACM that will be disturbed must be removed in accordance with applicable regulations.

Lead was detected in the paint chip samples. AKRF recommended that construction activities with the potential to disturb lead-based paint and lead-containing paint be performed in accordance with the applicable OSHA regulation (OSHA 29 CFR 1926.62-Lead Exposure in Construction).

PCB caulk samples were either non-detect or below the regulatory criteria of 50 ppm of total PCBs.

Asbestos Abatement Specification Section 13282, AKRF, Inc., July 2014

AKRF prepared an asbestos abatement specification section for removal of ACM from Main Clubhouse, Main Barn and Barn Annex of the subject property. The specification section indicated that all asbestos abatement work is to be performed in accordance with New York State Department of Labor Industrial Code Rule 56 (NYS ICR 56). The specification section outlined: regulatory requirements; handling, packaging and disposal requirements; and monitoring requirements during abatement.

Lead Paint Specification Section 12823, AKRF, Inc., July 2014

AKRF prepared a lead paint specification section for handling of confirmed and assumed lead paint in the project site structures. The specification section outlined compliance with 29 CFR 1926.62, OSHA Lead Exposure in Construction and for the areas of the Barn structure where renovation rather than demolition is proposed, compliance with criteria to be considered " lead-based paint free" under 24 CFR Part 35.

Hazardous Materials Specification Section 13280, AKRF, Inc., July 2014

AKRF prepared a lead paint specification section for handling and disposal of universal wastes and hazardous materials including: refrigerants, fluorescent and high intensity discharge light bulbs and ballasts, thermostats, mercury switches, transformers, hydraulic equipment and associated fluids, and housekeeping chemicals, and petroleum residue from the project site.

Environmental Management Specification Section 13284, AKRF, Inc., July 2014

AKRF prepared an environmental management specification section for handling and disposal of soil and dewatering fluids. The specification section included work practices, transportation, disposal, waste characterization sampling and endpoint sampling.

Tank Removal Specification Section 13200, AKRF, Inc., July 2014

AKRF prepared a tank removal specification section for removal and disposal of the aboveground storage tank (AST) located near the maintenance garage and provides requirements for removal and disposal of any additional tanks discovered at the site.

3.0 SITE HAZARDS

3.1 Hazard Potential

Based upon the 2011 Phase II Environmental Site Assessment investigation, VOCs, including: 1,2,4,5-tetramethylbenzene, 1,2,4-trimethylbenzene, benzene, ethylbenzene, isopropylbenzene, naphthalene, n-propylbenzene, o-xylene, p/m-xylene, toluene, and trichloroethene and SVOCs including: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, indeno(1,2,3-cd)pyrene, and naphthalene were found at concentrations exceeding their respective Class GA groundwater standards.

Mercury was detected in one of the samples (S1) at 2.2 ppm, below the 5.8 ppm SCO for mercury in the form of inorganic salts, as identified in the Technical Support Document for 6 NYCRR Part 375. Other metals, pesticides, VOCs, and SVOCs, were detected in the soil samples analyzed at concentrations less than their respective SCOs and other VOCs and SVOCs were found at concentrations less than their respective Class GA standards.

From the 2011 Phase I Environmental Site Assessment and subsequent investigations conducted at the site, potential hazards include:

- Pesticides and lawn maintenance chemicals have been used throughout the Property's history. Lead, mercury and/or arsenic were detected in two of the 36 shallow soil samples above the SCOs, which may be related to historic pesticide use.
- A tank failure (NYSDEC Spill #0504600) was reported on the Property on July 18, 2005. The listing indicated that holes were discovered in a 1,000-gallon gasoline tank. The spill was reportedly remediated and closed as of January 3, 2006. The site contact indicated that the gasoline UST was removed in 2005, along with a diesel fuel AST and heating oil UST near the Property entrance, where new patches of asphalt were observed. Limited residual petroleum contamination was observed in the subsurface in the vicinity of the former gasoline UST.
- Various cleaning supplies were observed in storage rooms throughout the property. Various maintenance equipment, including fertilizer sprayers, were located in the maintenance garage. Minor staining was noted in the maintenance garage.
- Asbestos-containing materials (ACM) is present in the buildings.
- Lead containing paint is present in the buildings.
- Fluorescent lighting fixtures, pad-mounted transformers and electrical equipment may include polychlorinated biphenyl (PCB)- and/or mercury-containing components.

3.2 Hazard Evaluation

The most likely routes of exposure are breathing of particulate-laden air released during renovation, demolition and soil disturbing activities, dermal contact, and accidental ingestion. Appendix A includes specific health effects from known on-site chemicals. This Plan addresses procedures (including training, air monitoring, work practices and emergency response) to reduce the potential for unnecessary and unacceptable exposure to these contaminants.

The potential adverse health effects from these detected contaminants are diverse. Many of these compounds are known or suspected to result in chronic illness from long-term exposures. However, due to the limited nature of the proposed construction, only acute effects are a potential concern.

This Plan addresses potential environmental hazards from the presence of hazardous materials. It is not intended to address the normal hazards of construction work, which are separately covered by OSHA regulations and/or local and state construction codes and regulations.

3.2.1 Hazards of Concern

Check all that apply		
(x) Organic Chemicals	(x) Inorganic Chemicals	( ) Radiological
( ) Biological	( ) Explosive/Flammable	( ) Oxygen Deficient Atm.
(x) Heat Stress	(x) Cold Stress	( ) Other
Comments: No personnel are permitted to enter permit confined spaces		

3.2.2 Physical Characteristics

Check all that apply		
(x) Liquid	(x) Solid	( ) Sludge
( ) Vapors	( ) Unknown	( ) Other
Comments:		

3.2.3 Hazardous Materials

Check all that apply					
Chemicals	Solids	Sludges	Solvents	Oils	Other
( ) Acids	(x) Ash	( ) Paints	( ) Halogens	( ) Transformer	( ) Lab
( ) Caustics	(x) Asbestos	( ) Metals	(x) Petroleum	( ) Other DF	( ) Pharm
( ) Pesticides	( ) Tailings	( ) POTW	( ) Other	( ) Motor or Hydraulic Oil	( ) Hospital
(x) Petroleum	( ) Other	( ) Other – Tars & Other NAPL		( ) Other	( ) Rad.
( ) Inks					( ) MGP
( ) PCBs					( ) Mold
(x) Metals					( ) Other
(x)Other: SVOCs					

3.2.4 Chemicals of Concern

Chemicals	**REL/PEL**	**Health Hazards**
Benzene	REL = 0.1 ppm PEL = 1 ppm STEL = 5 ppm	Irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude, dermatitis; bone marrow depression, potential occupational carcinogen.
Ethylbenzene	REL = 100 ppm PEL = 100 ppm	Irritation eyes, skin, mucous membrane; headache; dermatitis; narcosis, coma.

Naphthalene	REL = 10 ppm PEL = 10 ppm	Irritation eyes; headache, confusion, excitement, malaise; nausea, vomiting, abdominal pain; irritation bladder; profuse sweating; jaundice; hematuria (blood in the urine), renal shutdown; dermatitis, optical neuritis, corneal damage
Xylenes	REL = 100 ppm PEL = 100 ppm	Irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, uncoordination, staggering gait; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis
Toluene	REL = 100 ppm PEL = 200 ppm STEL = 300 ppm	Irritation eyes, nose; lassitude, confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage.
Lead	REL= 0.1 mg/m^3 PEL= 0.05 mg/m^3	Weak, lassitude, insomnia; facial pallor, pale eye, anorexia, low-weight, malnutrition, constipation, abdominal pain, colic; anemia; gingival lead line; tremors, paralysis wrists and ankles; encephalopathy; kidney disease; irritation eyes; hypotension.
Mercury	REL = 0.1 mg/m^3 PEL = 0.05 mg/m^3	Irritation of eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion); stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria.
Arsenic	REL = 0.002 mg/m^3 PEL = 0.01 mg/m^3	Digestive tract pain, nausea, vomiting, diarrhea, decreased production of red and white blood cells, abnormal heart function, blood vessel damage, liver and/or kidney injury, and impaired nerve function, causing a "pins and needles" effect in the feet and hands.
Particulate	PEL = 15 mg/m^3 (total) PEL = 5 mg/m^3 (respirable)	Irritation eyes, skin, throat, upper respiratory system
Asbestos	PEL = 0.01 f/cc STEL = 1.0 f/cc	Asbestosis (chronic exposure): dyspnea (breathing difficulty), interstitial fibrosis, restricted pulmonary function, finger clubbing; irritation eyes; [potential occupational carcinogen]
Polycyclic Aromatic Hydrocarbons (PAHs)	PEL = 5 mg/m^3	Harmful effects to skin, bodily fluids, and ability to fight disease, reproductive problems; potential carcinogen.
Trichloroethene	REL = 25 ppm PEL = 100 ppm	Headaches, lung irritation, dizziness, poor coordination, impaired heart function, unconsciousness, and nerve, kidney and liver damage.
Comments: REL = NIOSH Recommended Exposure Limit PEL = OSHA Permissible Exposure Limit STEL = OSHA Short Term Exposure Limit f/cc = Fibers per cubic centimeter		

3.2.5 Physical Hazards

Heat Stress

The use of personal protective equipment, including Level C or greater, may create heat stress. Monitoring of personnel wearing personal protective clothing should commence when the ambient temperature is 72ºF or above.

To monitor the workers, be familiar with the following heat-related disorders and their symptoms:

Prickly Heat (Heat rash)

Painful, itchy red rash. Occurs during sweating, on skin covered by clothing.

Heat Cramps

Painful spasm of arm, leg or abdominal muscles, during or after work.

Heat Exhaustion

Headache, nausea, dizziness. Cool, clammy, moist skin. Heavy sweating. Weak, fast pulse. Shallow respiration, normal temperature.

Heat Fatigue

Weariness, irritability, loss of skill for fine or precision work. Decreased ability to concentrate. No loss of temperature control.

Heat Syncope (Heat Collapse)

Fainting while standing in a hot environment.

Heat Stroke

Headache, nausea, weakness, hot dry skin, fever, rapid strong pulse, rapid deep respirations, loss of consciousness, convulsions, coma. **This is a life threatening condition.**

Do not permit a worker to wear a semi-permeable or impermeable garment if he/she is showing signs or symptoms of heat-related illness.

Prevention of Heat Stress - Proper training and preventative measures will aid in averting loss of worker productivity and serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat related illness. To avoid heat stress the following steps should be taken:

- Adjust work schedules;
- Mandate work slowdowns as needed;
- Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided;
- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods; and
- Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat, i.e., eight fluid ounces (0.23 liters) of water must be ingested for approximately every eight ounces (0.23 kg) of weight lost. The normal thirst mechanism is not sensitive enough to ensure that enough water will be drunk to replace lost sweat. When heavy sweating occurs, encourage the worker to drink more. The following strategies may be useful:
    - Maintain water temperature 50^{o} to 60^{o}F (10^{o} to 16.6^{o}C).
    - Provide small disposal cups that hold about four ounces (0.1 liter).
    - Have workers drink 16 ounces (0.5 liters) of fluid (preferably water or dilute drinks) before beginning work.
    - Urge workers to drink a cup or two every 15 to 20 minutes, or at each monitoring break. A total of 1 to 1.6 gallons (4 to 6 liters) of fluid per day are recommended, but more may be necessary to maintain body weight.
    - Train workers to recognize the symptoms of heat related illness.

Cold Related Illness

If work on this project begins in the winter months, thermal injury due to cold exposure can become a problem for field personnel. Systemic cold exposure is referred to as hypothermia. Local cold exposure is generally called frostbite.

Hypothermia - Hypothermia is defined as a decrease in the patient core temperature below 96°F. Symptoms of hypothermia include: shivering, apathy, listlessness, sleepiness, and unconsciousness.

Frostbite - Frostbite is both a general and medical term given to areas of local cold injury. Frostbite rarely occurs unless the ambient temperatures are less than freezing and usually less than 20°F. Symptoms of frostbite are: a sudden blanching or whitening of the skin; the skin has a waxy or white appearance and is firm to the touch; tissues are cold, pale, and solid.

Prevention of Cold-Related Illness - To prevent cold-related illness:

- Educate workers to recognize the symptoms of frostbite and hypothermia;
- Identify and limit known risk factors;
- Assure the availability of enclosed, heated environment on or adjacent to the site;
- Assure the availability of dry changes of clothing;
- Assure the availability of warm drinks; and
- Start (oral) temperature recording at the job site:
    - At the Field Team Leader's discretion when suspicion is based on changes in a worker's performance or mental status.
    - As a screening measure, two times per shift, under unusually hazardous conditions (e.g., wind-chill less than 20°F, or wind-chill less than 30°F with precipitation).
    - As a screening measure whenever any one worker on the site develops hypothermia.

Any person developing moderate hypothermia (a core temperature of 92°F) cannot return to work for 48 hours.

Noise

Work activities during the proposed construction activities may be conducted at locations with high noise levels from the operation of equipment. Hearing protection will be used as necessary.

Slips, Trips and Fall Hazards

Care should be exercised when walking at the site, especially when carrying equipment. The presence of surface debris, uneven surfaces, facility equipment, and soil piles contribute to tripping hazards.

Utilities (Electrocution and Fire Hazards)

The possibility of encountering underground utilities poses fire, explosion, and electrocution hazards. All excavation work will be preceded by review of available utility drawings and by notification of the subsurface work to the New York One Call Center. Potential adverse effects of electrical hazards include burns and electrocution, which could result in death.

4.0 ASBESTOS-CONTAINING MATERIALS

An asbestos survey was performed and a specification section was prepared for removal of asbestos-containing materials (ACM) in accordance with the requirements of New York State Department of Labor Industrial Code Rule 56 (NYS ICR 56). The asbestos survey determined floor tiles and associated mastics, plaster walls and ceilings, ceiling panels, duct breeching, ceramic tile set, pipe insulation, duct insulation, boiler insulation, tar and roofing materials to be ACM.

Any ACM that will be disturbed by renovation or demolition activities must be removed in accordance with applicable regulations. ACM abatement shall be performed in accordance with NYS ICR 56, As Amended, Effective March 21, 2007. General work procedures shall include:

1. All work affecting ACM shall be performed by a contractor with a valid NYS asbestos handling license and by workers with valid NYS asbestos handling certificates.
2. The Owner will provide non-asbestos contractors with details regarding the presence of asbestos in their portion of the buildings.
3. ACM shall be properly handled, packaged, and transported for disposal in an asbestos-only landfill.
4. All work shall be accomplished in strict adherence to the project Specifications and Drawings, applicable federal, state, and local regulations.
5. Contractor shall monitor and be responsible for safety and industrial hygiene work practices and compliance with all regulations.
6. Contractor shall make all abatement related notifications as required by applicable regulations and obtain all abatement permits.
7. Contractor shall provide all temporary services and controls including electrical service to Owner's Environmental Consultant for operation of pumps, fans, and other testing equipment.
8. Contractor shall implement abatement procedures acceptable to local, state and federal regulatory agencies.
9. Location of decontamination system enclosure(s), waste holding area, and schedule of waste transfer to transport vehicle, and location of negative air exhaust shall be approved by the Owner.
10. Procedures for hauling and disposal of asbestos waste shall comply with 40 CFR, Part 61, 49 CFR, Part 171 and 172, and other applicable state, regional, and local government regulations.
11. Owner shall provide third-party air monitoring in accordance with NYS ICR 56.

5.0 LEAD PAINT

Lead paint is assumed to be present throughout the study site buildings. Any renovation activities with the potential to disturb lead-based paint must be performed in accordance with the applicable Occupational Safety and Health Administration regulation (OSHA 29 CFR 1926.62—Lead Exposure in Construction). Renovation, repair, and painting projects which are subject to the U.S. Environmental Protection Agency (EPA) lead safety rules and lead-safe work practices shall be performed in accordance with Code of Federal Regulations Part 745 (EPA 40 CFR Part 745).

Lead paint abatement is not to be performed in the structures other than the Barn, except as required to perform demolition in accordance with 29 CFR 1926.62, OSHA Lead Exposure in Construction. For the areas of the Barn structure where renovation rather than demolition is proposed, the portions to be

renovated shall be inspected by the Owner's Consultant at the completion of gut-demolition work (and prior to new construction) to confirm that it meets the criteria to be considered " lead-based paint free" under 24 CFR Part 35.

General work procedures shall include:

1. All work affecting lead paint shall be performed in accordance with 29 CFR 1926.62 and, as applicable, EPA 40 CFR Part 745.
2. Manual demolition, scraping and manual sanding of lead-containing paint surfaces and power tool cleaning with dust collection systems shall be performed in conjunction with engineering and work practice controls meeting the requirements of 29 CFR 1926.62.
3. Components with lead-containing paint shall be removed intact to the extent practicable.
4. Contractor shall be responsible for personnel air monitoring, waste characterization and classification, and transportation/disposal off-site of lead paint wastes/debris and lead contaminated wastes/debris generated from the lead paint disturbance.
5. Chemical stripping shall be used for lead paint removal on surfaces that will be subjected to welding, cutting, or torch burning. No chemical strippers containing methylene chloride or other chlorinated solvents shall be used by the Contractor at this facility. Abrasive blasting, heat stripping, uncontained hydroblasting, welding, cutting, or torch burning shall not be performed on surfaces where lead paint is present.
6. Monitoring of workers performing demolition/cleaning/disturbance of painted surfaces shall be completed to document personnel occupational exposure. Items containing any amount of lead concentration are considered lead-containing coatings per 29 CFR 1926.62, OSHA Lead Exposure in Construction. OSHA does not recognize a minimum limit for lead concentration in paint for the purpose of disturbance.
7. All wastes shall be properly disposed of off-site at an approved disposal facility. The wastes shall be transported by a transporter permitted to transport wastes per 6 NYCRR Part 364.

6.0 MISCELLANEOUS WASTES

Prior to 1979, PCBs were widely used for their cooling properties in electrical equipment such as transformers, capacitors, switches, and voltage regulators. Fluorescent lighting fixtures may include PCB-containing components (including capacitors, and potting compounds) and mercury. Transformers may utilize PCB-containing oil.

All hazardous and non-hazardous materials that will be affected by construction activities shall be removed from the project site and disposed of in accordance with applicable regulations. Materials include, but are not limited to: universal wastes, batteries, bulbs and ballasts, refrigerants, thermostats, mercury switches, transformers, hydraulic equipment and all associated fluids, cleaning supplies, paints, solvents, lubricants, pesticides, and herbicides.

General work procedures shall include:

1. The Contractor shall pump dielectric fluids from the transformers. Any transformer components that cannot be pumped free of liquids prior to removal shall be drained into DOT-approved containers over polyethylene sheeting.
2. The Contractor shall remove all light ballasts from the site. Ballasts labeled "non-PCB" shall be recycled or disposed of in accordance with applicable regulations. Ballasts that are not labeled or

that are labeled as PCB-containing shall be recycled at a facility with EPA approval for recycling PCB ballasts or disposed of as hazardous waste in accordance with applicable regulations.

3. The Contractor shall remove all fluorescent and high-intensity discharge lamps from the site. All lamps shall be recycled at a facility with EPA approval for recycling used fluorescent lamps or disposed of as hazardous waste in accordance with applicable regulations. Lamps shall be handled, packaged and transported in such a manner as to avoid breakage.
4. The Contractor shall remove all mercury switches, thermostats, silent switches, mechanical switches, relays and contacts from the site.
5. The Contractor shall remove and recycle or dispose of all refrigerants at the project site in accordance with applicable regulations. The individual who removes the refrigerants must be certified for removal of refrigerants by an EPA-approved training company.
6. Transformers, light ballasts, fluorescent lamps, mercury containing devices, and refrigerants shall be handled, transported and disposed of in accordance with applicable regulations.
7. The Owner and Owner's Consultant shall be informed immediately if any indications (such as staining, odor, or sheen) of contaminated soil are encountered.
8. The Contractor shall provide waste manifests/bills of lading for disposal of all transformers, light ballasts, fluorescent lamps, mercury containing devices, refrigerants, medical wastes, etc.

7.0 HEALTH AND SAFETY OFFICER

The contractor or engineer will designate one of its personnel as the Site Safety Officer (SSO). The SSO will be a competent person responsible for the implementation of this plan. The SSO has stop-work authorization, which he/she will execute on his/her determination of an imminent safety hazard, emergency situation, or other potentially dangerous situation. If the SSO must be absent from the Site, he/she will designate a suitably qualified replacement that is familiar with the CHASP.

8.0 TRAINING

All those who enter the work area while intrusive activities are being performed must recognize and understand the potential hazards to health and safety. All construction personnel upon entering the Site must attend a brief training meeting, its purpose being to:

- Make workers aware of the potential hazards they may encounter;
- Instruct workers on how to identify potential hazards,
- Provide the knowledge and skills necessary for them to perform the work with minimal risk to health and safety;
- Make workers aware of the purpose and limitations of safety equipment; and
- Ensure that they can safely avoid or escape from emergencies.

Each member of the construction crew will be instructed in these objectives before he/she goes onto the Site. Construction personnel will be responsible for identifying potential hazards in the work zone. The SSO or other suitably trained individual will be responsible for conducting the training program. Others who enter the Site must be accompanied by a suitably-trained construction worker.

9.0 GENERAL WORK PRACTICES

To protect the health and safety of the field personnel, all field personnel will adhere to the guidelines listed below during activities involving subsurface disturbance in contaminated areas.

- Eating, drinking, chewing gum or tobacco, and smoking are prohibited, except in designated areas on the Site. These areas will be designated by the SSO.
- Workers must wash their hands and face thoroughly on leaving the work area and before eating, drinking, or any other such activity. The workers should shower as soon as possible after leaving the Site.
- Contact with contaminated or suspected surfaces should be avoided.
- The buddy system should always be used; each buddy should watch for signs of fatigue, exposure, and heat stress.

10.0 PERSONAL PROTECTIVE EQUIPMENT

The personal protection equipment required for various kinds of site investigation tasks are based on 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response, Appendix B, "General Description and Discussion of the Levels of Protection and Protective Gear."

AKRF field personnel and other site personnel shall wear, at a minimum, Level D personal protective equipment. The protection will be based on the air monitoring described in Section 7.2.

LEVEL OF PROTECTION & PPE		**1 – Excavation**
Level D (x) Steel Toe Shoes (x) Hard Hat **(within 25 ft of excavator)** (x) Work Gloves	(x) Safety Glasses ( ) Face Shield (x) Ear Plugs (within 25 ft of drill rig/excavator) ( ) Latex Gloves	Yes
Level D – Modified ***(in addition to Level D)*** (x) Tyvek Coveralls	(x) Nitrile Gloves ( ) Overboots ( ) Saranex Coveralls	As necessary
Level C ***(in addition to Level D – Modified)*** ( ) Half-Face Respirator (x) Full Face Respirator ( ) Full-Face PAPR	( ) Particulate Cartridge ( ) Organic Cartridge (x) Dual Organic/ Particulate Cartridge	If PID > 10 ppm (breathing zone) If particulate > 5 mg/m^3
Comments: Cartridges to be changed out at least once per shift unless warranted beforehand (e.g., more difficult to breath or any odors detected). **Asbestos PPE shall conform to 29CFR1926.1101 and 29CFR1910.1001.** **Lead Paint PPE shall conform to 29CFR1926.62.**		

11.0 CONSTRUCTION MEASURES

During AKRF's December 2010 Phase II investigation, laboratory analysis detected VOCs in the two groundwater samples GB-2-GW and GB-3-GW (south side of Parcel A) at concentrations exceeding Class GA standards in groundwater sample GB-2-GW, and SVOCs were detected in the two groundwater samples at concentrations exceeding their respective Class GA standards. The detected VOCs and SVOCs in groundwater, particularly GB-2-GW, may be the result of residual petroleum contamination from the historical gasoline spill at that location.

A contingency plan is provided in Section 12.0 for additional measures to be implemented in the event that unanticipated underground storage tanks, hydraulic lifts, and/or grossly contaminated soil are encountered

Excavated material generated during site activities will be tested prior to reuse, if it is intended to be placed as shallow soil (within the top 2 feet) and not covered by a building or paved surface.

11.1 Soil Disposal

Disposal of all excavated material will be in accordance with applicable federal, state and local requirements, including those for hazardous waste, municipal solid waste, industrial waste, petroleum-contaminated soil, construction and demolition debris, etc. If applicable, manifests and truck tickets will be maintained to document appropriate disposal.

For any soil disposed of off-site, waste-characterization sampling shall be performed according to the requirements of the anticipated disposal facility(ies). Parameters analyzed will depend on the disposal facility(ies) requirements as identified by the Contractor.

As applicable, manifest forms and shipment manifest records would be completed as required by the appropriate regulatory agencies for verifying the material and quantity of each load in unit of volume and weight.

11.2 Transportation

Transportation of material leaving the site for off-site disposal will be in accordance with federal, state and local requirements (including 6 NYCRR Part 364 and U.S. DOT regulations) covering licensing of haulers and trucks, placarding, truck routes, manifesting, etc.

The schedule for truck arrival will be coordinated to meet the approved project schedule. The schedule will be compatible with the availability of equipment and personnel for material handling operations at the job site.

All vehicles leaving the project site will be inspected to ensure that contaminated soils adhering to the wheels or under carriage are removed prior to the vehicle leaving the site. Any situations involving material spilled in transit or mud and dust tracked off-site shall be remedied. The access routes shall be inspected for road conditions, overhead clearance, and weight restrictions.

Contaminated materials from other projects will not be combined with material from the construction area. The transporter will not deliver waste to any facility other than the disposal facility(s) listed on the shipping manifest.

11.3 Dust Control

To prevent the potential off-site transport of dust that may contain above-background levels of contaminants, the following dust control measures will be implemented during all earth-disturbing operations:

- Water will be available (and used) on-site for sprinkling/wetting to suppress dust in dry weather or as necessary.

- All haul trucks will have tarp covers.
- Stabilized construction entrances (gravel pads) will be placed at access points to prevent tracking out of dust.
- All other erosion and sediment controls outlined in the project Stormwater Pollution Prevention Plan (SWPPP) shall be adhered to.

11.4 Work Zone Air Monitoring

If petroleum contaminated soil is encountered, a photoionization detector (PID) and particulate monitor will also be used to monitor the work zone during excavation. Measurements will be taken prior to commencement of work and continuously during the work as outlined in the table below. Measurements will be made as close to the workers as practical. Particulate and PID measurements will be collected at the breathing height of the workers. The SSO shall set up the equipment and confirm that it is working properly. His/her designee may oversee the air measurements during the day. The initial measurement for the day will be performed before the start of work and will establish the background level for that day. The final measurement for the day will be performed after the end of work. The action levels and required responses are listed in the table below.

Instrument	Task to be Monitored	Action Level	Response Action
PID (OVM 580B or equivalent)	Any tasks where petroleum contaminated soil is encountered	Less than 10 ppm in breathing zone.	Level D or D-Modified
		Between 10 and 100 ppm	Level C
		More than 100 ppm	Stop work. Resume work when readings are less than 100 ppm.
Particulate monitor (Dust Trak or equivalent)	Any tasks where petroleum contaminated soil or metal(s) in soil is encountered	Less than 5 mg/m^3	Level D
		Between 5 mg/m^3 and 125 mg/m^3	Level C. Apply dust suppression measures. If <5 mg/m^3, resume work using Level D. Otherwise, use Level C.
		Above 125 mg/m^3	Stop work. Apply additional dust suppression measures. Resume work when less than 125 mg/m^3.

Field personnel will be trained in the proper operation of all field instruments at the start of the field program. Instruction manuals for the equipment will be on file at the site for referencing proper operation, maintenance, and calibration procedures.

The equipment will be calibrated according to manufacturer specifications at the start of each day of fieldwork. If an instrument fails calibration, the project manager will be contacted immediately to obtain a replacement instrument and arrange for repairs. A calibration log will be maintained to record the date of each calibration, any failure to calibrate and corrective actions taken. The PID will be calibrated each day using 100 parts per million (ppm) isobutylene standard gas.

11.5 Stockpiling Procedures

All excess soil and fill material intended for off-site disposal, and any petroleum-contaminated soil that may be encountered, can be stockpiled or loaded directly onto trucks for off-site disposal, if pre-approved by the receiving facility. No petroleum-contaminated soil will be re-

used on-site for grading or other purposes. If contaminated stockpiled soil is expected to remain on-site overnight or longer, the stockpile will be placed on and covered with polyethylene sheeting and secured with large rocks or other appropriate weights to protect against leaching or runoff of contaminants into groundwater or stormwater. The surface surrounding the stockpile will be graded to provide for positive drainage away from the pile. Stockpiles will be managed to minimize dust generation, run-off and erosion, using water, plastic covers, silt fences, and/or hay bales, as necessary.

Soil will be segregated and stockpiled based on whether it will be reused on-site (with no petroleum contamination) and its known or anticipated type and/or level of contamination (based on analytical data, PID readings, odor, staining, etc.). Stockpiles will be separated by a sufficient distance to ensure that mixing of dissimilar or potentially dissimilar materials does not occur. The location and classification of stockpiles will be tracked on site drawings and updated, if necessary, at the end of each workday according to the following categories:

- Non-petroleum-contaminated soil for on-site reuse;
- Non-petroleum-contaminated soil for off-site disposal;
- Petroleum-contaminated soil for off-site disposal; and
- Soil pending analysis.

Copies of site drawings will be kept in the field log book. Stockpiles intended for off-site disposal may be mixed with other compatible stockpiles on-site (compatibility will be determined by the requirements of the receiving disposal facility), but hazardous wastes (if any) will not be mixed with non-hazardous wastes.

11.5.1 Alternatives to Stockpiling

Alternative procedures to stockpiling could include, but are not limited to, the following:

- Direct placement of non-petroleum contaminated soil (for reuse on-site) in designated areas where the existing elevations will be raised for the development; and
- Agreement(s) from the intended disposal or treatment facilities to accept boring data and/or analytical data previously obtained so that materials may be directly loaded into trucks for shipment to the disposal facility.

12.0 CONTINGENCY PLAN

Low levels of petroleum-related contaminants were detected in the soil boring advanced in the vicinity of the former UST outside the maintenance garage (at the south side of Parcel A) that was removed in 2005 and reported spill that was closed in 2006.

It is possible that previously unidentified tanks, drums, containers, and/or contaminated soil may be encountered during excavation. If any evidence of buried tanks, drums or other containers, sludges, or soil which shows evidence of obvious contamination, such as heavy staining, sheen, or odors is detected, the affected area will be cordoned off and no further work will be performed at that location until the appropriate contingency response plan is implemented. Work zone air monitoring will be conducted during all contingency response actions, as described in the project CHASP.

12.1 Petroleum Tank Removal Contingency

In the event that tanks are encountered during soil excavation activities, the tanks and any appurtenances will be cleaned, removed and disposed of in accordance with accepted industry

standards and applicable federal, state, and local regulatory agency requirements. Tank and soil removal from the vicinity of discovered underground storage tanks will be conducted in consultation with the NYSDEC and Westchester County Department of Health (WCDOH)

According to 6 NYCRR Part 612.2, the existing State Petroleum Bulk Storage listing for the site must be updated to reflect the discovery and subsequent removal of any known or additional tanks from the site. Tank removal activities and any associated petroleum-contaminated soil removal must be documented in a Tank Closure Report, which will be submitted to NYSDEC and WCDOH.

Typical tank removal procedures are summarized below:

1. Open fill cap or vent pipe and measure for product. Collect a sample of the product. Tank contents will be sampled in accordance with applicable federal, state and local requirements and tested in accordance with the requirements of the receiving facility. Proper disposal of tank contents at an approved facility will be dictated by sample results.
2. Excavate to expose the tank. Vacuum liquid tank contents and pumpable tank bottom residue.
3. Excavate around the tank with care to avoid release of tank and piping contents. Hand excavation around the tank may be necessary. The sides of all excavated areas will be properly stabilized in accordance with OSHA regulations. Continuously monitor the excavated areas in the worker breathing zone for the presence of flammable, toxic or oxygen deficient atmosphere with a PID, a combustible gas indicator (CGI), and an oxygen meter.
4. Inert the tank of flammable vapors using dry ice and verify using an oxygen meter (less than 7 percent). An access hole will be cut in the tank and the tank will be thoroughly cleaned of residual liquids and sludges.
5. Entry of the tank, if necessary, shall be conducted in conformance with OSHA confined space requirements.
6. Remaining fuels, loose slurry, sludge materials and wastewater will be collected in DOT-approved drums, sampled and analyzed for disposal characterization. After disposal characterization, waste material will be removed and disposed of in accordance with applicable regulations.
7. Remove the tank and all associated piping from the ground and clean the outside of the tank. The tank and piping will be rendered "not reusable," removed from the site and disposed of according to applicable regulations with proper documentation. Remove and dispose of all concrete tank support structures or vaults as encountered.
8. Spill reporting to the NYSDEC Spill Hotline (800-457-7362) and WCDOH (914) 813-5000 shall be conducted, as necessary.
9. After tank removal, examine for evidence of petroleum releases in accordance with NYSDEC requirements.
10. Suspect materials will be field-screened with a PID. If soil contamination is present, excavate and remove contaminated soil from the tank areas in accordance with the stockpiling and/or direct-loading procedures presented in Sections 11.6. Material will be excavated until field screening with a PID yields concentrations of less than 20 ppm and until there are no remaining visible signs of contamination or odors. Endpoint sampling will be conducted as directed by the NYSDEC and/or WCDOH.
11. Photo-document all procedures and record all procedures in a bound field notebook.

12. Copies of all testing results, correspondence with disposal facilities concerning classification of materials, and permits/approvals will be maintained by the project manager and will be submitted to the NYSDEC and WCDOH in a Tank Closure Report.

12.2 Soil Contamination Contingency

If sludges or soil exhibiting obvious contamination, such as heavy staining, sheen, or odors, are encountered during excavation activities the following procedures will be implemented:

1. Spill reporting to the NYSDEC Spill Hotline (800-457-7362) will be conducted, as necessary.
2. The suspected soil will be sampled for laboratory analyses. Soil samples will be analyzed for parameters required by the intended disposal facility.
3. Contaminated soil will be excavated and removed in accordance with the stockpiling and/or direct-loading procedures presented in Sections 11.5 and 11.5.1. Soils intended for off-site disposal will be disposed of in accordance with applicable federal, state and local requirements and tested in accordance with the requirements of the receiving facility. Additional sample analysis may be required by alternative disposal facilities. Additional analysis may be run on existing sample material at the laboratory as long as all holding time and preservation requirements have not been exceeded. If there are exceedances to these requirements or if additional sampling material is required by the laboratory to complete the required analysis, additional samples may be collected.
4. The excavated soil will then be disposed of in accordance with all applicable federal, state and local regulations, as described in Section 11.1.
5. The excavation will continue vertically until no evidence of contamination is noted in the base of the excavation or until groundwater is encountered. The excavation will continue horizontally until no evidence of contamination is noted in the sidewalls of the excavation. Post-excavation endpoint samples will be collected from the sides and bottom of the excavated area, as required by the NYSDEC and WCDOH. Analytical parameters for post-excavation soil samples will be determined based on communications with NYSDEC and WCDOH. If post-excavation samples exceed action levels, then additional excavation will be performed, as warranted.
6. Copies of correspondence with disposal facilities concerning classification of materials, testing results, and permits/approvals will be maintained by the project manager and will be submitted to NYSDEC and WCDOH in a Tank Closure Report.

12.3 Air Monitoring Contingency

An air monitoring program will be implemented in the event that petroleum contaminated soil is encountered during the development activities to avoid or minimize exposure of the field personnel and the public to potential environmental hazards in the soil. Results of the air monitoring will be used to determine the appropriate response action, if needed.

If petroleum contaminated soil or other volatile organic compounds are detected, a PID will be used to perform air monitoring during sampling and excavation work in such areas. The PID will be calibrated with isobutylene in accordance with the manufacturer's recommendations.

A Dust Trak® dust monitor or equivalent will be used to measure concentration of total particulate matter during excavation activities where potential petroleum-contaminated soil, if any, will be disturbed.

If air monitoring is necessary, measurements for particulate and volatile organic compounds will be taken prior to commencement of the work and for at least 1 minute every 60 minutes during the work. The action levels developed for the site are based upon 15-minute averages of the

monitoring data. Measurements will be made as close to the workers as practical. Particulate and volatile organic compound measurements will be collected at the breathing height of the workers. The SSO shall set up the equipment and confirm that it is working properly. His/her designee may oversee the air measurements during the day. The initial measurement for the day will be performed before the start of work and will establish the background level for that day. The final measurement for the day will be performed after the end of work. The action levels and required responses are listed below in Table 1.

Table 1
Action Levels and Required Responses

Instrument	Task to be Monitored	Action Level	Response Action
PID (OVM 580B or equivalent)	Any tasks where petroleum contaminated soil is encountered	Less than 10 ppm in breathing zone.	Level D or D-Modified
		Between 10 and 100 ppm	Level C
		More than 100 ppm	Stop work. Resume work when readings are less than 100 ppm.
Particulate monitor (Dust Trak or equivalent)	Any tasks where petroleum-contaminated soil	Less than 5 mg/m^3	Level D
		Between 5 mg/m^3 and 125 mg/m^3	Level C. Apply dust suppression measures. If < 5 mg/m^3, resume work using Level D. Otherwise, use Level C.
		Above 125 mg/m^3	Stop work. Apply additional dust suppression measures. Resume work when less than 125 mg/m^3.
Notes: 15-minute time-weighted average, parts per million (ppm), milligrams per cubic meter (mg/m^3)			

13.0 DECONTAMINATION PROCEDURES

13.1 Personnel Decontamination

Personnel decontamination (decon), if deemed necessary by the SSO, will take place in a designated decontamination area. This area will be delineated during each stage of work. Personnel decontamination will consist of the following steps:

- Soap and potable water wash and potable water rinse of gloves;
- Coverall removal (if applicable);
- Glove removal;
- Disposable clothing removal; and
- Field wash of hands and face.

13.2 Sampling Equipment Decontamination

To avoid contamination and cross-contamination of samples, only dedicated or disposable sampling equipment may be used to collect samples. All non-disposable equipment involved in field sampling must be decontaminated before being brought to the sampling location, and must be properly decontaminated after use in accordance with the following procedure:

- Double wash with solution of Simple Green® and clean tap water;
- Double rinse with clean tap water;
- Rinse with clean distilled water; and
- Allow equipment to air dry.

13.3 Heavy Equipment Decontamination

If heavy equipment comes in contact with contaminated materials, it will be decontaminated prior to being relocated to a clean area or leaving the site. A designated decontamination pad will be constructed, where soil, dust, or oil will be washed off the exterior, undercarriage, and wheels or tracks of the equipment. Wash water will be collected for treatment and/or disposal.

14.0 EMERGENCY RESPONSE

14.1 Emergency Procedures

In the event that an emergency develops on site, the procedures delineated herein are to be immediately followed. Emergency conditions are considered to exist if:

- Any member of the field crew is involved in an accident or experiences any adverse effects or symptoms of exposure while on site; and
- A condition is discovered that suggests the existence of a situation more hazardous than anticipated.
- A spill of oil or other hazardous materials.

General emergency procedures, and specific procedures for personal injury, chemical exposure and radiation exposure, are described below. In the event of an accident or emergency, an Incident Report form should be filled out and placed in the project file. An example Incident Report form is provided in Appendix C. Information on emergency hand signals is provided in Appendix D.

14.2 Chemical Exposure

If a member of the field crew demonstrates symptoms of chemical exposure the procedures outlined below should be followed:

- Another team member (buddy) should remove the individual from the immediate area of contamination. The buddy should communicate to the SSO (via voice and hand signals) of the chemical exposure. The SSO should contact the appropriate emergency response agency.
- Precautions should be taken to avoid exposure of other individuals to the chemical.
- If the chemical is on the individual's clothing, the chemical should be neutralized or removed if it is safe to do so.
- If the chemical has contacted the skin, the skin should be washed with copious amounts of water.
- In case of eye contact, an emergency eye wash should be used. Eyes should be washed for at least 15 minutes.
- All chemical exposure incidents must be reported in writing to the Health and Safety Officer. The SSO is responsible for completing the Incident Report Form.

14.2.1 Personal Injury

In case of personal injury at the site, the following procedures should be followed:

- Another team member (buddy) should signal the SSO that an injury has occurred.
- A field team member trained in first aid can administer treatment to an injured worker.

- If deemed necessary, the victim should then be transported to the nearest hospital or medical center. If necessary, an ambulance should be called to transport the victim.
- The SSO is responsible for making certain that an Incident Report Form is completed. This form is to be submitted to the Health and Safety Officer. Follow-up action should be taken to correct the situation that caused the accident.
- Any incident (near miss, property damage, first aid, medical treatment, etc.) must be reported.

A first-aid kit, eye-wash, and blood-born pathogens kit will be kept on-site during the field activities.

14.2.2 Evacuation Procedures

- The SSO will initiate evacuation procedures by signaling to leave the site or containment structure;
- All personnel in the work area should evacuate the area and meet in the common designated area;
- All personnel suspected to be in or near the contract work area should be accounted for and the whereabouts or missing persons determined immediately; and
- The SSO will then give further instruction.

14.2.3 Procedures Implemented in the Event of a Major Fire, Explosion, or Emergency

- Notify the paramedics and/or fire department, as necessary;
- Signal the evacuation procedure previously outlined and implement the entire procedure;
- Isolate the area;
- Stay upwind of any fire;
- Keep the area surrounding the problem source clear after the incident occurs;
- Complete accident report for and distribute to appropriate personnel.

14.2.4 Spill Response

All personnel must take every precaution to minimize the potential for spills during site operations. Any spill shall be reported immediately to the Project Manager. The Project Manager will then determine and report any required spills to the WCDOH, NYSDEC, and/or National Response Center (NRC) Hotlines. Spill control apparatus (sorbent materials) will be located on-site. All materials used for the clean up of spills will be containerized and labeled separately from other wastes. The Project Manager will determine if additional spill response measures are required.

14.3 Hospital Directions

The location of the nearest hospital, as shown in Figure 1, is the White Plains Medical Center. The address of the hospital is Davis Avenue at East Post Road, White Plains, NY 10601.

The entrance to the emergency room is on Maple Avenue, just east of Davis Avenue on the west side of Broadway.

Hospital Name:	White Plains Medical Center
Phone Number:	(914) 681-0600
Address/Location:	Davis Avenue at East Post Road, White Plains, NY 10601
Directions:	Head southwest on Ridgeway toward Fairway Drive Turn RIGHT onto Mamaroneck Avenue Turn LEFT to stay on Mamaroneck Avenue Turn LEFT onto Maple Avenue Turn RIGHT onto Longview Avenue Turn LEFT onto East Post Road Hospital will be on the left

14.4 CHASP Contact Information

AKRF Project Manager – Colleen Griffiths ..... (914) 922-2363 (office), (646) 734-4028 (cell)

AKRF SSO – Stephen Schmid ..... (917) 580-1909

AKRF H&S Officer – Marc Godick ..... (914) 922-2356

Client Project Manager – TBD .....

White Plains Medical Center ..... (914) 681-0600

Ambulance, Fire and Police Departments..... 911

NYSDEC Spill Response Hotline..... (800) 457-7362

WCDOH Petroleum Bulk Storage ..... (914) 813-5000

15.0 APPROVAL & ACKOWLEDGEMENTS OF CHASP

APPROVAL

Signed: _____ Date: _____

Project Manager

Signed: _____ Date: _____

Health and Safety Officer

Below is an affidavit that must be signed by all workers who enter the site. A copy of the CHASP must be on-site at all times and will be kept by the SSO.

AFFIDAVIT

I,_____(name), of_____(company name), have read the Construction Health and Safety Plan (CHASP) for the site located at the Former Ridgeway Country Club in the City of White Plains, New York. I agree to conduct all on-site work in accordance with the requirements set forth in this CHASP and understand that failure to comply with this CHASP could lead to my removal from the site.

Signed: _____ Company: _____ Date: _____
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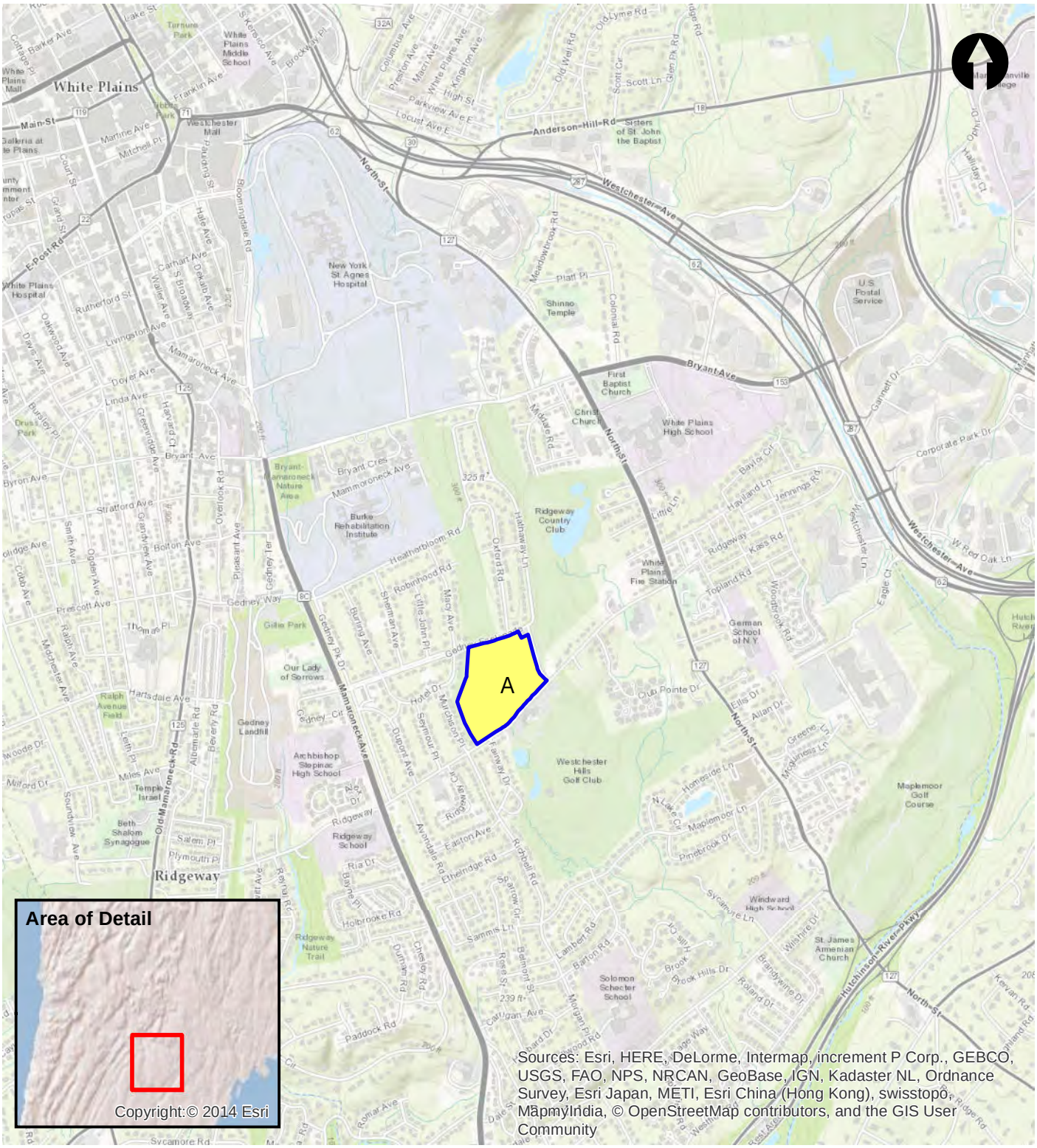
FIGURES



SOURCE
USGS 7.5 Minute Topographic Map
Glenville Quad 1975

Legend

Project Site

A Parcel Designation

0 1,000 2,000 Feet

Former Ridgeway Country Club
White Plains, New York

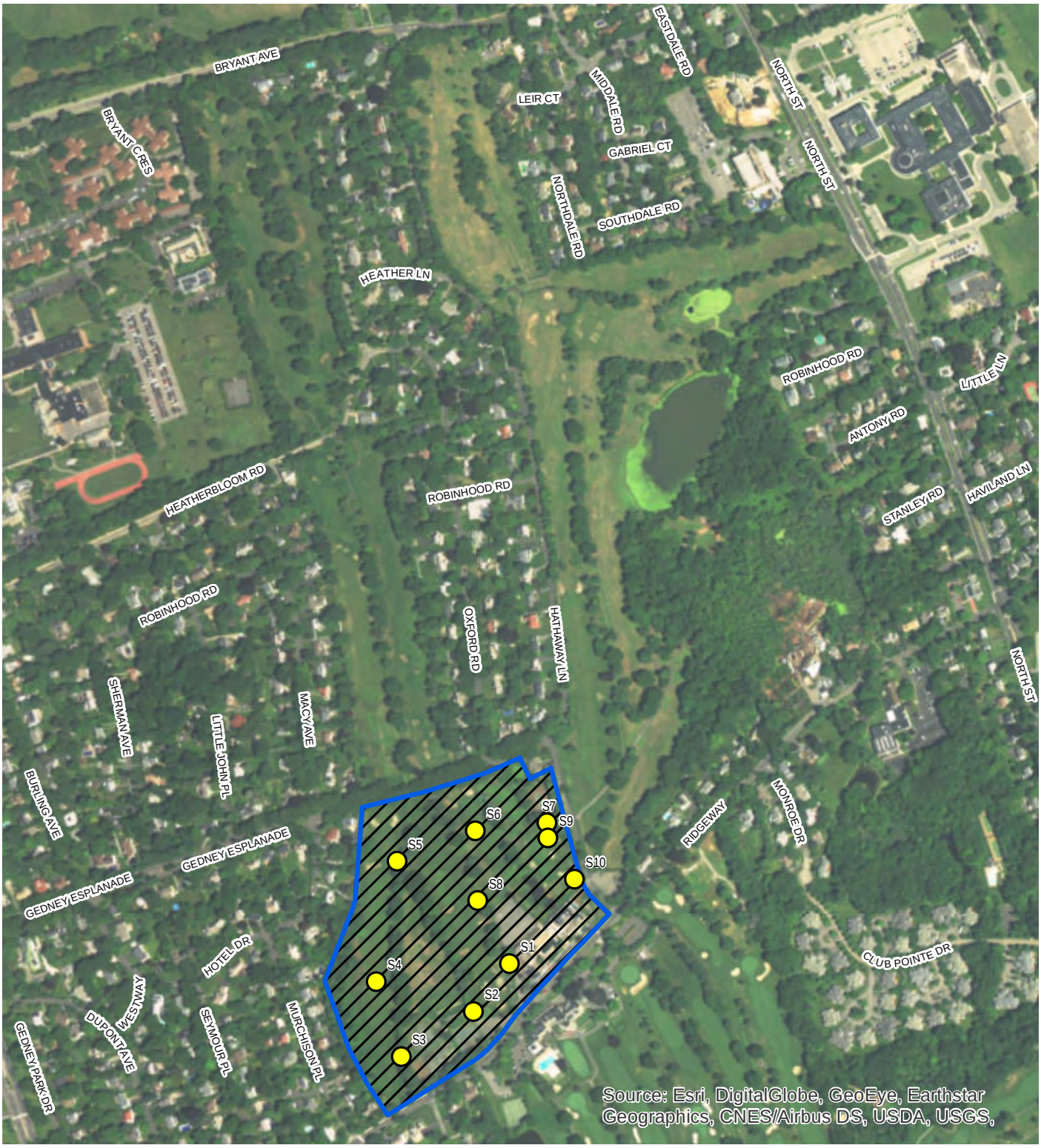
SITE LOCATION

AKRF
Environmental Consultants
34 S. Broadway, White Plains, NY 10601

DATE
10/24/2016

PROJECT No.
40437

FIGURE
1



Legend

Project Site

Shallow Soil Sample Locations

0 500 1,000 2,000

Feet

Former Ridgeway Country Club

White Plains, New York

SITE PLAN DETAIL

AKRF

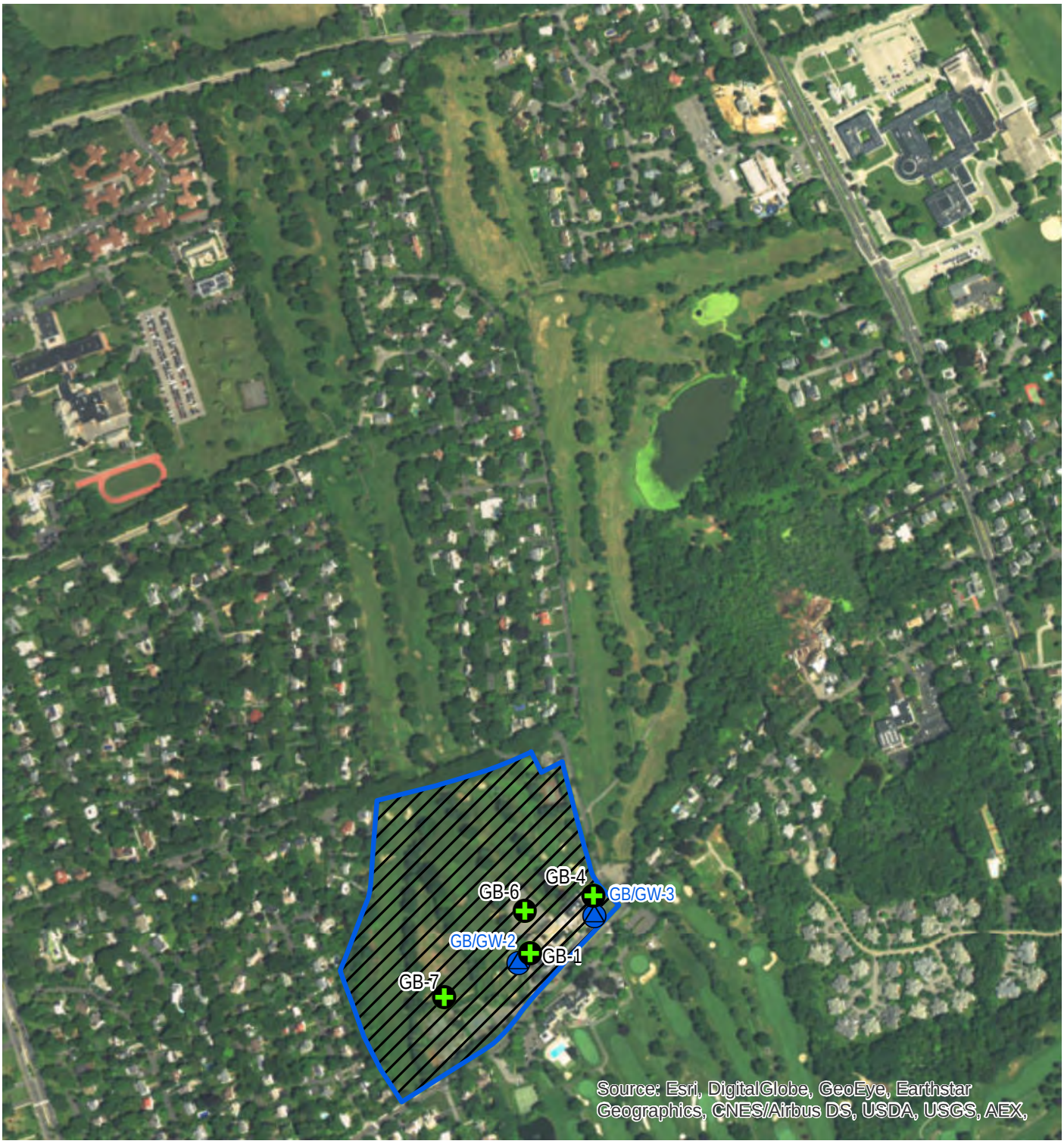
Environmental Consultants

34 S. Broadway, White Plains, NY 10601

DATE **10/24/2016**

PROJECT No. **40437**

FIGURE **2**



Legend

- Boring Location
- Boring/Groundwater Sampling Location
- Project Site

0 500 1,000 2,000

Feet

Former Ridgeway Country Club

White Plains, New York

SOIL BORING/GROUNDWATER SAMPLING LOCATIONS

AKRF

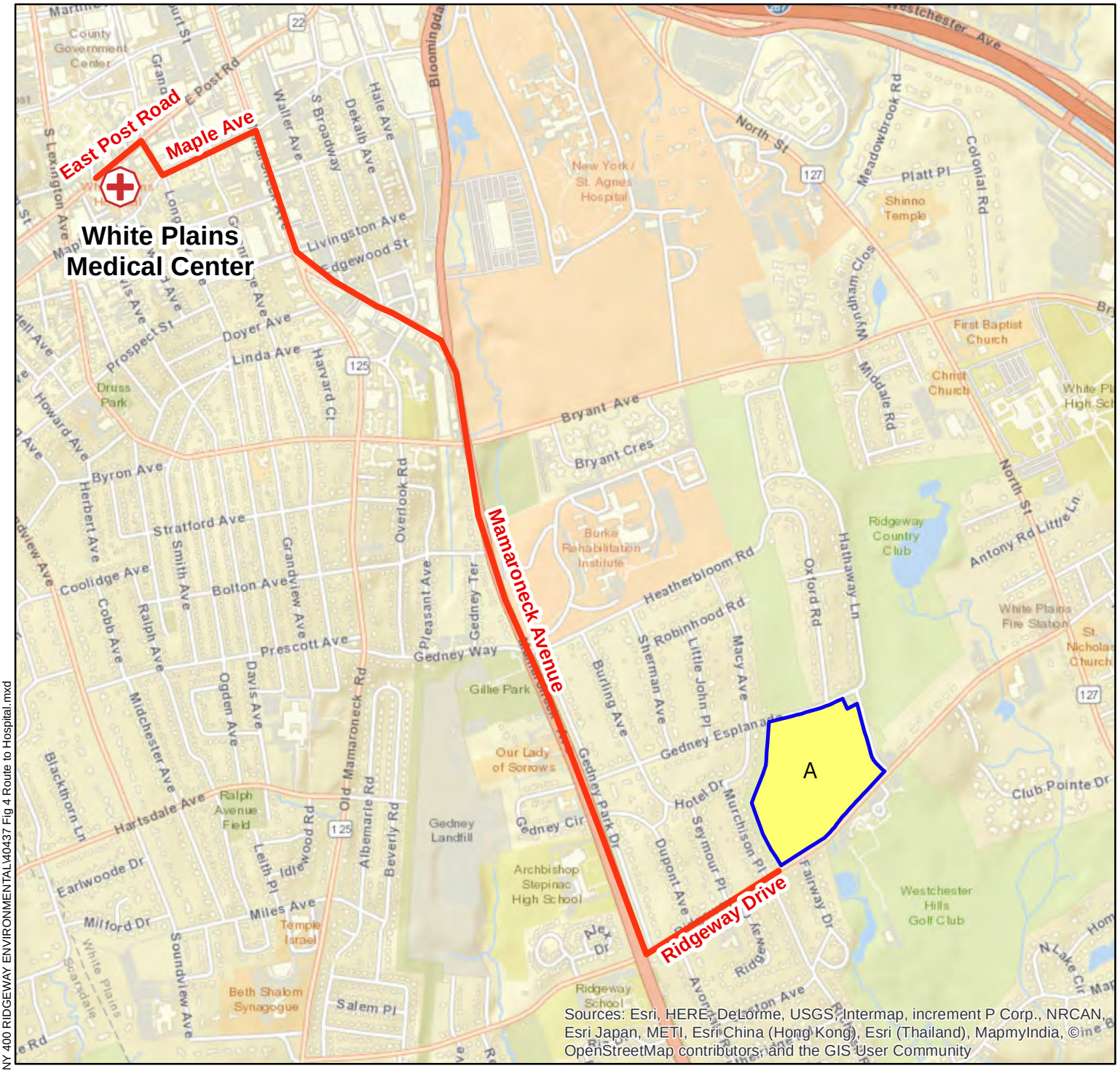
Environmental Consultants

34 S. Broadway, White Plains, NY 10601

DATE 10/24/2016

PROJECT No. 40437

FIGURE 3



Legend

- Route to Hospital
- Project Site
- A — Parcel Designation

Feet
0 500 1,000

White Plains Medical Center
Davis Avenue at East Post Road
White Plains, NY 10601
(914) 681-0600

Former Ridgeway Country Club White Plains, New York	AKRF	DATE **10/24/2016**
HOSPITAL LOCATION MAP	Environmental Consultants 440 Park Avenue South, New York, N.Y. 10016	PROJECT No. **40437** FIGURE **4**

O:\Projects\40437 - FASNY 400 RIDGEWAY ENVIRONMENTAL\40437 Fig 4 Route to Hospital.mxd

APPENDIX A

POTENTIAL HEALTH EFFECTS FROM ON-SITE CONTAMINANTS

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

ETHYLBENZENE
CAS # 100-41-4

Agency for Toxic Substances and Disease Registry ToxFAQs **June 1999**

This fact sheet answers the most frequently asked health questions (FAQs) about ethylbenzene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Ethylbenzene is a colorless liquid found in a number of products including gasoline and paints. Breathing very high levels can cause dizziness and throat and eye irritation. Ethylbenzene has been found in at least 731 of the 1,467 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is ethylbenzene?

(Pronounced ĕth′ əl bĕn′ zēn′)

Ethylbenzene is a colorless, flammable liquid that smells like gasoline. It is found in natural products such as coal tar and petroleum and is also found in manufactured products such as inks, insecticides, and paints.

Ethylbenzene is used primarily to make another chemical, styrene. Other uses include as a solvent, in fuels, and to make other chemicals.

What happens to ethylbenzene when it enters the environment?

- Ethylbenzene moves easily into the air from water and soil.
- It takes about 3 days for ethylbenzene to be broken down in air into other chemicals.
- Ethylbenzene may be released to water from industrial discharges or leaking underground storage tanks.
- In surface water, ethylbenzene breaks down by reacting with other chemicals found naturally in water.
- In soil, it is broken down by soil bacteria.

How might I be exposed to ethylbenzene?

- Breathing air containing ethylbenzene, particularly in areas near factories or highways.
- Drinking contaminated tap water.
- Working in an industry where ethylbenzene is used or made.
- Using products containing it, such as gasoline, carpet glues, varnishes, and paints.

How can ethylbenzene affect my health?

Limited information is available on the effects of ethylbenzene on people's health. The available information shows dizziness, throat and eye irritation, tightening of the chest, and a burning sensation in the eyes of people exposed to high levels of ethylbenzene in air.

Animals studies have shown effects on the nervous system, liver, kidneys, and eyes from breathing ethylbenzene in air.

How likely is ethylbenzene to cause cancer?

The EPA has determined that ethylbenzene is not classifiable as to human carcinogenicity.

ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html

No studies in people have shown that ethylbenzene exposure can result in cancer. Two available animal studies suggest that ethylbenzene may cause tumors.

How can ethylbenzene affect children?

Children may be exposed to ethylbenzene through inhalation of consumer products, including gasoline, paints, inks, pesticides, and carpet glue. We do not know whether children are more sensitive to the effects of ethylbenzene than adults.

It is not known whether ethylbenzene can affect the development of the human fetus. Animal studies have shown that when pregnant animals were exposed to ethylbenzene in air, their babies had an increased number of birth defects.

How can families reduce the risk of exposure to ethylbenzene?

Exposure to ethylbenzene vapors from household products and newly installed carpeting can be minimized by using adequate ventilation.

Household chemicals should be stored out of reach of children to prevent accidental poisoning. Always store household chemicals in their original containers; never store them in containers children would find attractive to eat or drink from, such as old soda bottles. Gasoline should be stored in a gasoline can with a locked cap.

Sometimes older children sniff household chemicals, including ethylbenzene, in an attempt to get high. Talk with your children about the dangers of sniffing chemicals.

Is there a medical test to show whether I've been exposed to ethylbenzene?

Ethylbenzene is found in the blood, urine, breath, and some body tissues of exposed people. The most common way to test for ethylbenzene is in the urine. This test measures substances formed by the breakdown of ethylbenzene. This test needs to be done within a few hours after exposure occurs, because the substances leave the body very quickly.

These tests can show you were exposed to ethylbenzene, but cannot predict the kind of health effects that might occur.

Has the federal government made recommendations to protect human health?

The EPA has set a maximum contaminant level of 0.7 milligrams of ethylbenzene per liter of drinking water (0.7 mg/L).

The EPA requires that spills or accidental releases into the environment of 1,000 pounds or more of ethylbenzene be reported to the EPA.

The Occupational Safety and Health Administration (OSHA) has set an occupational exposure limit of 100 parts of ethylbenzene per million parts of air (100 ppm) for an 8-hour workday, 40-hour workweek.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1999. Toxicological profile for ethylbenzene. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

BENZENE
CAS # 71-43-2

This fact sheet answers the most frequently asked health questions (FAQs) about benzene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Benzene is a widely used chemical formed from both natural processes and human activities. Breathing benzene can cause drowsiness, dizziness, and unconsciousness; long-term benzene exposure causes effects on the bone marrow and can cause anemia and leukemia. Benzene has been found in at least 813 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is benzene?

(Pronounced bĕn′zēn′)

Benzene is a colorless liquid with a sweet odor. It evaporates into the air very quickly and dissolves slightly in water. It is highly flammable and is formed from both natural processes and human activities.

Benzene is widely used in the United States; it ranks in the top 20 chemicals for production volume. Some industries use benzene to make other chemicals which are used to make plastics, resins, and nylon and synthetic fibers. Benzene is also used to make some types of rubbers, lubricants, dyes, detergents, drugs, and pesticides. Natural sources of benzene include volcanoes and forest fires. Benzene is also a natural part of crude oil, gasoline, and cigarette smoke.

What happens to benzene when it enters the environment?

- Industrial processes are the main source of benzene in the environment.
- Benzene can pass into the air from water and soil.
- It reacts with other chemicals in the air and breaks down within a few days.
- Benzene in the air can attach to rain or snow and be carried back down to the ground.
- It breaks down more slowly in water and soil, and can pass through the soil into underground water.
- Benzene does not build up in plants or animals.

How might I be exposed to benzene?

- Outdoor air contains low levels of benzene from tobacco smoke, automobile service stations, exhaust from motor vehicles, and industrial emissions.
- Indoor air generally contains higher levels of benzene from products that contain it such as glues, paints, furniture wax, and detergents.
- Air around hazardous waste sites or gas stations will contain higher levels of benzene.
- Leakage from underground storage tanks or from hazardous waste sites containing benzene can result in benzene contamination of well water.
- People working in industries that make or use benzene may be exposed to the highest levels of it.
- A major source of benzene exposures is tobacco smoke.

How can benzene affect my health?

Breathing very high levels of benzene can result in death, while high levels can cause drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion, and unconsciousness. Eating or drinking foods containing high levels of benzene can cause vomiting, irritation of the stomach, dizziness, sleepiness, convulsions, rapid heart rate, and death.

ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html

The major effect of benzene from long-term (365 days or longer) exposure is on the blood. Benzene causes harmful effects on the bone marrow and can cause a decrease in red blood cells leading to anemia. It can also cause excessive bleeding and can affect the immune system, increasing the chance for infection.

Some women who breathed high levels of benzene for many months had irregular menstrual periods and a decrease in the size of their ovaries. It is not known whether benzene exposure affects the developing fetus in pregnant women or fertility in men.

Animal studies have shown low birth weights, delayed bone formation, and bone marrow damage when pregnant animals breathed benzene.

How likely is benzene to cause cancer?

The Department of Health and Human Services (DHHS) has determined that benzene is a known human carcinogen. Long-term exposure to high levels of benzene in the air can cause leukemia, cancer of the blood-forming organs.

Is there a medical test to show whether I've been exposed to benzene?

Several tests can show if you have been exposed to benzene. There is test for measuring benzene in the breath; this test must be done shortly after exposure. Benzene can also be measured in the blood, however, since benzene disappears rapidly from the blood, measurements are accurate only for recent exposures.

In the body, benzene is converted to products called metabolites. Certain metabolites can be measured in the urine. However, this test must be done shortly after exposure and is not a reliable indicator of how much benzene you have been exposed to, since the metabolites may be present in urine from other sources.

Has the federal government made recommendations to protect human health?

The EPA has set the maximum permissible level of benzene in drinking water at 0.005 milligrams per liter (0.005 mgL). The EPA requires that spills or accidental releases into the environment of 10 pounds or more of benzene be reported to the EPA.

The Occupational Safety and Health Administration (OSHA) has set a permissible exposure limit of 1 part of benzene per million parts of air (1 ppm) in the workplace during an 8-hour workday, 40-hour workweek.

Glossary

Anemia: A decreased ability of the blood to transport oxygen.

Carcinogen: A substance with the ability to cause cancer.

CAS: Chemical Abstracts Service.

Chromosomes: Parts of the cells responsible for the development of hereditary characteristics.

Metabolites: Breakdown products of chemicals.

Milligram (mg): One thousandth of a gram.

Pesticide: A substance that kills pests.

References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Benzene (update) produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 404-498-0093. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

ARSENIC
CAS # 7440-38-2

Division of Toxicology ToxFAQs™ December 2003

This fact sheet answers the most frequently asked health questions (FAQs) about arsenic. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to higher than average levels of arsenic occurs mostly in the workplace, near hazardous waste sites, or in areas with high natural levels. At high levels, inorganic arsenic can cause death. Exposure to lower levels for a long time can cause a discoloration of the skin and the appearance of small corns or warts. Arsenic has been found at 1,014 of the 1,598 National Priority List sites identified by the Environmental Protection Agency (EPA).

What is arsenic?

Arsenic is a naturally occurring element widely distributed in the earth's crust. In the environment, arsenic is combined with oxygen, chlorine, and sulfur to form inorganic arsenic compounds. Arsenic in animals and plants combines with carbon and hydrogen to form organic arsenic compounds.

Inorganic arsenic compounds are mainly used to preserve wood. Organic arsenic compounds are used as pesticides, primarily on cotton plants.

What happens to arsenic when it enters the environment?

❑ Arsenic cannot be destroyed in the environment. It can only change its form.
❑ Arsenic in air will settle to the ground or is washed out of the air by rain.
❑ Many arsenic compounds can dissolve in water.
❑ Fish and shellfish can accumulate arsenic, but the arsenic in fish is mostly in a form that is not harmful.

How might I be exposed to arsenic?

❑ Eating food, drinking water, or breathing air containing arsenic.
❑ Breathing contaminated workplace air.
❑ Breathing sawdust or burning smoke from wood treated with arsenic.
❑ Living near uncontrolled hazardous waste sites containing arsenic.
❑ Living in areas with unusually high natural levels of arsenic in rock.

How can arsenic affect my health?

Breathing high levels of inorganic arsenic can give you a sore throat or irritated lungs. Ingesting high levels of inorganic arsenic can result in death. Lower levels of arsenic can cause nausea and vomiting, decreased production of red and white blood cells, abnormal heart rhythm, damage to blood vessels, and a sensation of "pins and needles" in hands and feet.

Ingesting or breathing low levels of inorganic arsenic for a long time can cause a darkening of the skin and the

appearance of small "corns" or "warts" on the palms, soles, and torso.

Skin contact with inorganic arsenic may cause redness and swelling.

Organic arsenic compounds are less toxic than inorganic arsenic compounds. Exposure to high levels of some organic arsenic compounds may cause similar effects as inorganic arsenic.

How likely is arsenic to cause cancer?

Several studies have shown that inorganic arsenic can increase the risk of lung cancer, skin cancer, bladder cancer, liver cancer, kidney cancer, and prostate cancer. The World Health Organization (WHO), the Department of Health and Human Services (DHHS), and the EPA have determined that inorganic arsenic is a human carcinogen.

How can arsenic affect children?

We do not know if exposure to arsenic will result in birth defects or other developmental effects in people. Birth defects have been observed in animals exposed to inorganic arsenic.

It is likely that health effects seen in children exposed to high amounts of arsenic will be similar to the effects seen in adults.

How can families reduce the risk of exposure to arsenic?

❑ If you use arsenic-treated wood in home projects, you should wear dust masks, gloves, and protective clothing to decrease exposure to sawdust.
❑ If you live in an area with high levels of arsenic in water or soil, you should use cleaner sources of water and limit contact with soil.

Is there a medical test to show whether I've been exposed to arsenic?

There are tests to measure the level of arsenic in blood, urine, hair, or fingernails. The urine test is the most reliable test for arsenic exposure within the last few days. Tests on hair and fingernails can measure exposure to high levels or arsenic over the past 6-12 months. These tests can determine if you have been exposed to above-average levels of arsenic. They cannot predict how the arsenic levels in your body will affect your health.

Has the federal government made recommendations to protect human health?

EPA has set limits on the amount of arsenic that industrial sources can release to the environment and has restricted or canceled many uses of arsenic in pesticides. EPA has set a limit of 0.01 parts per million (ppm) for arsenic in drinking water.

The Occupational Safety and Health Administration has set limits of 10 µg arsenic per cubic meter of workplace air (10 $\mu g/m^3$) for 8 hour shifts and 40 hour work weeks.

Source of Information

Agency for Toxic Substances and Disease Registry (ATSDR). 2000. Toxicological Profile for Arsenic. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html . ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

XYLENE
CAS # 1330-20-7

This fact sheet answers the most frequently asked health questions (FAQs) about xylene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

SUMMARY: Exposure to xylene occurs in the workplace and when you use paint, gasoline, paint thinners and other products that contain it. People who breathe high levels may have dizziness, confusion, and a change in their sense of balance. This substance has been found in at least 658 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is xylene?

(Pronounced zī′lēn)

Xylene is a colorless, sweet-smelling liquid that catches on fire easily. It occurs naturally in petroleum and coal tar and is formed during forest fires. You can smell xylene in air at 0.08–3.7 parts of xylene per million parts of air (ppm) and begin to taste it in water at 0.53–1.8 ppm.

Chemical industries produce xylene from petroleum. It's one of the top 30 chemicals produced in the United States in terms of volume.

Xylene is used as a solvent and in the printing, rubber, and leather industries. It is also used as a cleaning agent, a thinner for paint, and in paints and varnishes. It is found in small amounts in airplane fuel and gasoline.

What happens to xylene when it enters the environment?

- Xylene has been found in waste sites and landfills when discarded as used solvent, or in varnish, paint, or paint thinners.
- It evaporates quickly from the soil and surface water into the air.
- In the air, it is broken down by sunlight into other less harmful chemicals.
- It is broken down by microorganisms in soil and water.
- Only a small amount of it builds up in fish, shellfish, plants, and animals living in xylene-contaminated water.

How might I be exposed to xylene?

- Breathing xylene in workplace air or in automobile exhaust.
- Breathing contaminated air.
- Touching gasoline, paint, paint removers, varnish, shellac, and rust preventatives that contain it.
- Breathing cigarette smoke that has small amounts of xylene in it.
- Drinking contaminated water or breathing air near waste sites and landfills that contain xylene.
- The amount of xylene in food is likely to be low.

How can xylene affect my health?

Xylene affects the brain. High levels from exposure for short periods (14 days or less) or long periods (more than 1 year) can cause headaches, lack of muscle coordination, dizziness, confusion, and changes in one's sense of balance. Exposure of

people to high levels of xylene for short periods can also cause irritation of the skin, eyes, nose, and throat; difficulty in breathing; problems with the lungs; delayed reaction time; memory difficulties; stomach discomfort; and possibly changes in the liver and kidneys. It can cause unconsciousness and even death at very high levels.

Studies of unborn animals indicate that high concentrations of xylene may cause increased numbers of deaths, and delayed growth and development. In many instances, these same concentrations also cause damage to the mothers. We do not know if xylene harms the unborn child if the mother is exposed to low levels of xylene during pregnancy.

How likely is xylene to cause cancer?

The International Agency for Research on Cancer (IARC) has determined that xylene is not classifiable as to its carcinogenicity in humans.

Human and animal studies have not shown xylene to be carcinogenic, but these studies are not conclusive and do not provide enough information to conclude that xylene does not cause cancer.

Is there a medical test to show whether I've been exposed to xylene?

Laboratory tests can detect xylene or its breakdown products in exhaled air, blood, or urine. There is a high degree of agreement between the levels of exposure to xylene and the levels of xylene breakdown products in the urine. However, a urine sample must be provided very soon after exposure ends because xylene quickly leaves the body. These tests are not routinely available at your doctor's office.

Has the federal government made recommendations to protect human health?

The EPA has set a limit of 10 ppm of xylene in drinking water.

The EPA requires that spills or accidental releases of xylenes into the environment of 1,000 pounds or more must be reported.

The Occupational Safety and Health Administration (OSHA) has set a maximum level of 100 ppm xylene in workplace air for an 8-hour workday, 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) and the American Conference of Governmental Industrial Hygienists (ACGIH) also recommend exposure limits of 100 ppm in workplace air.

NIOSH has recommended that 900 ppm of xylene be considered immediately dangerous to life or health. This is the exposure level of a chemical that is likely to cause permanent health problems or death.

Glossary

Evaporate: To change from a liquid into a vapor or a gas.

Carcinogenic: Having the ability to cause cancer.

CAS: Chemical Abstracts Service.

ppm: Parts per million.

Solvent: A liquid that can dissolve other substances.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for xylenes (update). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone:1-888-422-8737, FAX: 404-498-0093. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

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AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

TOLUENE
CAS # 108-88-3

Division of Toxicology ToxFAQs™ **February 2001**

This fact sheet answers the most frequently asked health questions (FAQs) about toluene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to toluene occurs from breathing contaminated workplace air, in automobile exhaust, some consumer products paints, paint thinners, fingernail polish, lacquers, and adhesives. Toluene affects the nervous system. Toluene has been found at 959 of the 1,591 National Priority List sites identified by the Environmental Protection Agency

What is toluene?

Toluene is a clear, colorless liquid with a distinctive smell. Toluene occurs naturally in crude oil and in the tolu tree. It is also produced in the process of making gasoline and other fuels from crude oil and making coke from coal.

Toluene is used in making paints, paint thinners, fingernail polish, lacquers, adhesives, and rubber and in some printing and leather tanning processes.

What happens to toluene when it enters the environment?

❑ Toluene enters the environment when you use materials that contain it. It can also enter surface water and groundwater from spills of solvents and petrolieum products as well as from leasking underground storage tanks at gasoline stations and other facilities.

❑ When toluene-containing products are placed in landfills or waste disposal sites, the toluene can enter the soil or water near the waste site.

❑ Toluene does not usually stay in the environment long.

❑ Toluene does not concentrate or buildup to high levels in animals.

How might I be exposed to toluene?

❑ Breathing contaminated workplace air or automobile exhaust.

❑ Working with gasoline, kerosene, heating oil, paints, and lacquers.

❑ Drinking contaminated well-water.

❑ Living near uncontrolled hazardous waste sites containing toluene products.

How can toluene affect my health?

Toluene may affect the nervous system. Low to moderate levles can cause tiredness, confusion, weakness, drunken-type actions, memory loss, nausea, loss of appetite, and

hearing and color vision loss. These symptoms usually disappear when exposure is stopped.

Inhaling High levels of toluene in a short time can make you feel light-headed, dizzy, or sleepy. It can also cause unconsciousness, and even death.

High levels of toluene may affect your kidneys.

How likely is toluene to cause cancer?

Studies in humans and animals generally indicate that toluene does not cause cancer.

The EPA has determined that the carcinogenicity of toluene can not be classified.

How can toluene affect children?

It is likely that health effects seen in children exposed to toluene will be similar to the effects seen in adults. Some studies in animals suggest that babies may be more sensitive than adults.

Breathing very high levels of toluene during pregnancy can result in children with birth defects and retard mental abilities, and growth. We do not know if toluene harms the unborn child if the mother is exposed to low levels of toluene during pregnancy.

How can families reduce the risk of exposure to toluene?

❑ Use toluene-containing products in well-ventilated areas.

❑ When not in use, toluene-containing products should be tightly covered to prevent evaporation into the air.

Is there a medical test to show whether I've been exposed to toluene?

There are tests to measure the level of toluene or its breakdown products in exhaled air, urine, and blood. To determine if you have been exposed to toluene, your urine or blood must be checked within 12 hours of exposure. Several other chemicals are also changed into the same breakdown products as toluene, so some of these tests are not specific for toluene.

Has the federal government made recommendations to protect human health?

EPA has set a limit of 1 milligram per liter of drinking water (1 mg/L).

Discharges, releases, or spills of more than 1,000 pounds of toluene must be reported to the National Response Center.

The Occupational Safety and Health Administration has set a limit of 200 parts toluene per million of workplace air (200 ppm).

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2000. Toxicological Profile for Toluene. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html . ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

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TETRACHLOROETHYLENE
CAS # 127-18-4

Agency for Toxic Substances and Disease Registry ToxFAQs **September 1997**

This fact sheet answers the most frequently asked health questions (FAQs) about tetrachloroethylene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Tetrachloroethylene is a manufactured chemical used for dry cleaning and metal degreasing. Exposure to very high concentrations of tetrachloroethylene can cause dizziness, headaches, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death. Tetrachloroethylene has been found in at least 771 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is tetrachloroethylene?

(Pronounced tĕt′rə-klôr′ ō-ĕth′ə-lēn′)

Tetrachloroethylene is a manufactured chemical that is widely used for dry cleaning of fabrics and for metal-degreasing. It is also used to make other chemicals and is used in some consumer products.

Other names for tetrachloroethylene include perchloroethylene, PCE, and tetrachloroethene. It is a nonflammable liquid at room temperature. It evaporates easily into the air and has a sharp, sweet odor. Most people can smell tetrachloroethylene when it is present in the air at a level of 1 part tetrachloroethylene per million parts of air (1 ppm) or more, although some can smell it at even lower levels.

What happens to tetrachloroethylene when it enters the environment?

- Much of the tetrachloroethylene that gets into water or soil evaporates into the air.
- Microorganisms can break down some of the tetrachloroethylene in soil or underground water.
- In the air, it is broken down by sunlight into other chemicals or brought back to the soil and water by rain.
- It does not appear to collect in fish or other animals that live in water.

How might I be exposed to tetrachloroethylene?

- When you bring clothes from the dry cleaners, they will release small amounts of tetrachloroethylene into the air.
- When you drink water containing tetrachloroethylene, you are exposed to it.

How can tetrachloroethylene affect my health?

High concentrations of tetrachloroethylene (particularly in closed, poorly ventilated areas) can cause dizziness, headache, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death.

Irritation may result from repeated or extended skin contact with it. These symptoms occur almost entirely in work (or hobby) environments when people have been accidentally exposed to high concentrations or have intentionally used tetrachloroethylene to get a "high."

In industry, most workers are exposed to levels lower than those causing obvious nervous system effects. The health effects of breathing in air or drinking water with low levels of tetrachloroethylene are not known.

Results from some studies suggest that women who work in dry cleaning industries where exposures to tetrachloroethyl-

ene can be quite high may have more menstrual problems and spontaneous abortions than women who are not exposed. However, it is not known if tetrachloroethylene was responsible for these problems because other possible causes were not considered.

Results of animal studies, conducted with amounts much higher than those that most people are exposed to, show that tetrachloroethylene can cause liver and kidney damage. Exposure to very high levels of tetrachloroethylene can be toxic to the unborn pups of pregnant rats and mice. Changes in behavior were observed in the offspring of rats that breathed high levels of the chemical while they were pregnant.

How likely is tetrachloroethylene to cause cancer?

The Department of Health and Human Services (DHHS) has determined that tetrachloroethylene may reasonably be anticipated to be a carcinogen. Tetrachloroethylene has been shown to cause liver tumors in mice and kidney tumors in male rats.

Is there a medical test to show whether I've been exposed to tetrachloroethylene?

One way of testing for tetrachloroethylene exposure is to measure the amount of the chemical in the breath, much the same way breath-alcohol measurements are used to determine the amount of alcohol in the blood.

Because it is stored in the body's fat and slowly released into the bloodstream, tetrachloroethylene can be detected in the breath for weeks following a heavy exposure.

Tetrachloroethylene and trichloroacetic acid (TCA), a breakdown product of tetrachloroethylene, can be detected in the blood. These tests are relatively simple to perform. These tests aren't available at most doctors' offices, but can be performed at special laboratories that have the right equipment.

Because exposure to other chemicals can produce the same breakdown products in the urine and blood, the tests for breakdown products cannot determine if you have been exposed to tetrachloroethylene or the other chemicals.

Has the federal government made recommendations to protect human health?

The EPA maximum contaminant level for the amount of tetrachloroethylene that can be in drinking water is 0.005 milligrams tetrachloroethylene per liter of water (0.005 mg/L).

The Occupational Safety and Health Administration (OSHA) has set a limit of 100 ppm for an 8-hour workday over a 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) recommends that tetrachloroethylene be handled as a potential carcinogen and recommends that levels in workplace air should be as low as possible.

Glossary

Carcinogen: A substance with the ability to cause cancer.

CAS: Chemical Abstracts Service.

Milligram (mg): One thousandth of a gram.

Nonflammable: Will not burn.

References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Tetrachloroethylene (update) produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone:1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

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POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)

Agency for Toxic Substances and Disease Registry ToxFAQs **September 1996**

This fact sheet answers the most frequently asked health questions (FAQs) about polycyclic aromatic hydrocarbons (PAHs). For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

SUMMARY: Exposure to polycyclic aromatic hydrocarbons usually occurs by breathing air contaminated by wild fires or coal tar, or by eating foods that have been grilled. PAHs have been found in at least 600 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What are polycyclic aromatic hydrocarbons?

(Pronounced pŏl′ĭ-sī′klĭk ăr′ə-măt′ĭk hī′drə-kar′bənz)

Polycyclic aromatic hydrocarbons (PAHs) are a group of over 100 different chemicals that are formed during the incomplete burning of coal, oil and gas, garbage, or other organic substances like tobacco or charbroiled meat. PAHs are usually found as a mixture containing two or more of these compounds, such as soot.

Some PAHs are manufactured. These pure PAHs usually exist as colorless, white, or pale yellow-green solids. PAHs are found in coal tar, crude oil, creosote, and roofing tar, but a few are used in medicines or to make dyes, plastics, and pesticides.

What happens to PAHs when they enter the environment?

- PAHs enter the air mostly as releases from volcanoes, forest fires, burning coal, and automobile exhaust.
- PAHs can occur in air attached to dust particles.
- Some PAH particles can readily evaporate into the air from soil or surface waters.
- PAHs can break down by reacting with sunlight and other chemicals in the air, over a period of days to weeks.
- PAHs enter water through discharges from industrial and wastewater treatment plants.
- Most PAHs do not dissolve easily in water. They stick to solid particles and settle to the bottoms of lakes or rivers.
- Microorganisms can break down PAHs in soil or water after a period of weeks to months.
- In soils, PAHs are most likely to stick tightly to particles; certain PAHs move through soil to contaminate underground water.
- PAH contents of plants and animals may be much higher than PAH contents of soil or water in which they live.

How might I be exposed to PAHs?

- Breathing air containing PAHs in the workplace of coking, coal-tar, and asphalt production plants; smokehouses; and municipal trash incineration facilities.
- Breathing air containing PAHs from cigarette smoke, wood smoke, vehicle exhausts, asphalt roads, or agricultural burn smoke.
- Coming in contact with air, water, or soil near hazardous waste sites.
- Eating grilled or charred meats; contaminated cereals, flour, bread, vegetables, fruits, meats; and processed or pickled foods.
- Drinking contaminated water or cow's milk.

- Nursing infants of mothers living near hazardous waste sites may be exposed to PAHs through their mother's milk.

How can PAHs affect my health?

Mice that were fed high levels of one PAH during pregnancy had difficulty reproducing and so did their offspring. These offspring also had higher rates of birth defects and lower body weights. It is not known whether these effects occur in people.

Animal studies have also shown that PAHs can cause harmful effects on the skin, body fluids, and ability to fight disease after both short- and long-term exposure. But these effects have not been seen in people.

How likely are PAHs to cause cancer?

The Department of Health and Human Services (DHHS) has determined that some PAHs may reasonably be expected to be carcinogens.

Some people who have breathed or touched mixtures of PAHs and other chemicals for long periods of time have developed cancer. Some PAHs have caused cancer in laboratory animals when they breathed air containing them (lung cancer), ingested them in food (stomach cancer), or had them applied to their skin (skin cancer).

Is there a medical test to show whether I've been exposed to PAHs?

In the body, PAHs are changed into chemicals that can attach to substances within the body. There are special tests that can detect PAHs attached to these substances in body tissues or blood. However, these tests cannot tell whether any health effects will occur or find out the extent or source of your exposure to the PAHs. The tests aren't usually available in your doctor's office because special equipment is needed to conduct them.

Has the federal government made recommendations to protect human health?

The Occupational Safety and Health Administration (OSHA) has set a limit of 0.2 milligrams of PAHs per cubic meter of air (0.2 mg/m^3). The OSHA Permissible Exposure Limit (PEL) for mineral oil mist that contains PAHs is 5 mg/m^3 averaged over an 8-hour exposure period.

The National Institute for Occupational Safety and Health (NIOSH) recommends that the average workplace air levels for coal tar products not exceed 0.1 mg/m^3 for a 10-hour workday, within a 40-hour workweek. There are other limits for workplace exposure for things that contain PAHs, such as coal, coal tar, and mineral oil.

Glossary

Carcinogen: A substance that can cause cancer.

Ingest: Take food or drink into your body.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for polycyclic aromatic hydrocarbons. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

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NAPHTHALENE
CAS # 91-20-3

1-METHYLNAPHTHALENE
CAS # 90-12-0

2-METHYLNAPHTHALENE
CAS # 91-57-6

Division of Toxicology ToxFAQs™ **August 2005**

This fact sheet answers the most frequently asked health questions (FAQs) about naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because these substances may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to naphthalene, 1-methylnaphthalene, or 2-methylnaphthalene happens mostly from breathing air contaminated from the burning of wood, tobacco, or fossil fuels, industrial discharges, or moth repellents. Exposure to large amounts of naphthalene may damage or destroy some of your red blood cells. Naphthalene has caused cancer in animals. Naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene have been found in at least 687, 36, and 412, respectively, of the 1,662 National Priority List sites identified by the Environmental Protection Agency (EPA).

What are naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene?

Naphthalene is a white solid that evaporates easily. Fuels such as petroleum and coal contain naphthalene. It is also called white tar, and tar camphor, and has been used in mothballs and moth flakes. Burning tobacco or wood produces naphthalene. It has a strong, but not unpleasant smell. The major commercial use of naphthalene is in the manufacture of polyvinyl chloride (PVC) plastics. Its major consumer use is in moth repellents and toilet deodorant blocks.

1-Methylnaphthalene and 2-methylnaphthalene are naphthalene-related compounds. 1-Methylnaphthalene is a clear liquid and 2-methylnaphthalene is a solid; both can be smelled in air and in water at very low concentrations.

1-Methylnaphthalene and 2-methylnaphthalene are used to make other chemicals such as dyes and resins. 2-Methylnaphthalene is also used to make vitamin K.

What happens to naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene when they enter the environment?

❏ Naphthalene enters the environment from industrial and domestic sources, and from accidental spills.

❏ Naphthalene can dissolve in water to a limited degree and may be present in drinking water from wells close to hazardous waste sites and landfills.

❏ Naphthalene can become weakly attached to soil or pass through soil into underground water.

❏ In air, moisture and sunlight break it down within 1 day. In water, bacteria break it down or it evaporates into the air.

❏ Naphthalene does not accumulate in the flesh of animals or fish that you might eat.

❏ 1-Methylnaphthalene and 2-methylnaphthalene are expected to act like naphthalene in air, water, or soil because they have similar chemical and physical properties.

How might I be exposed to naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene?

❏ Breathing low levels in outdoor air.

❏ Breathing air contaminated from industrial discharges or smoke from burning wood, tobacco, or fossil fuels.

❏ Using or making moth repellents, coal tar products, dyes or inks could expose you to these chemicals in the air.

❏ Drinking water from contaminated wells.

❏ Touching fabrics that are treated with moth repellents containing naphthalene.

❏ Exposure to naphthalene, 1-methylnaphthalene and 2-methylnaphthalene from eating foods or drinking beverages is unlikely.

How can naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene affect my health?

Exposure to large amounts of naphthalene may damage or destroy some of your red blood cells. This could cause you to have too few red blood cells until your body replaces the destroyed cells. This condition is called hemolytic anemia. Some symptoms of hemolytic anemia are fatigue, lack of appetite, restlessness, and pale skin. Exposure to large amounts of naphthalene may also cause nausea, vomiting, diarrhea, blood in the urine, and a yellow color to the skin. Animals sometimes develop cloudiness in their eyes after swallowing high amounts of naphthalene. It is not clear whether this also develops in people. Rats and mice that breathed naphthalene vapors daily for a lifetime developed irritation and inflammation of their nose and lungs. It is unclear if naphthalene

ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html

causes reproductive effects in animals; most evidence says it does not.

There are no studies of humans exposed to 1-methylnaphthalene or 2-methylnaphthalene.

Mice fed food containing 1-methylnaphthalene and 2-methylnaphthalene for most of their lives had part of their lungs filled with an abnormal material.

How likely are naphthalene, 1-methylnaphthalene, or 2-methylnaphthalene to cause cancer?

There is no direct evidence in humans that naphthalene, 1-methylnaphthalene, or 2-methylnaphthalene cause cancer. However, cancer from naphthalene exposure has been seen in animal studies. Some female mice that breathed naphthalene vapors daily for a lifetime developed lung tumors. Some male and female rats exposed to naphthalene in a similar manner also developed nose tumors.

Based on the results from animal studies, the Department of Health and Humans Services (DHHS) concluded that naphthalene is reasonably anticipated to be a human carcinogen. The International Agency for Research on Cancer (IARC) concluded that naphthalene is possibly carcinogenic to humans. The EPA determined that naphthalene is a possible human carcinogen (Group C) and that the data are inadequate to assess the human carcinogenic potential of 2-methylnaphthalene.

How can naphthalene, 1-methylnaphthalene, or 2-methylnaphthalene affect children?

Hospitals have reported many cases of hemolytic anemia in children, including newborns and infants, who either ate naphthalene mothballs or deodorants cakes or who were in close contact with clothing or blankets stored in naphthalene mothballs. Naphthalene can move from a pregnant woman's blood to the unborn baby's blood. Naphthalene has been detected in some samples of breast milk from the general U.S. population, but not at levels that are expected to be of concern.

There is no information on whether naphthalene has affected development in humans. No developmental abnormalities were observed in the offspring from rats, mice, and rabbits fed naphthalene during pregnancy.

We do not have any information on possible health effects of 1-methylnaphthalene or 2-methylnaphthalene on children.

How can families reduce the risks of exposure to naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene?

❑ Families can reduce the risks of exposure to naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene by avoiding smoking tobacco, generating smoke during cooking, or using fireplaces or heating appliances in the their homes.

❑ If families use naphthalene-containing moth repellents, the material should be enclosed in containers that prevent vapors from escaping, and kept out of the reach from children.

❑ Blankets and clothing stored with naphthalene moth repellents should be aired outdoors to remove naphthalene odors and washed before they are used.

❑ Families should inform themselves of the contents of air deodorizers that are used in their homes and refrain from using deodorizers with naphthalene.

Is there a medical test to determine whether I've been exposed to naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene?

Tests are available that measure levels of these chemicals and their breakdown products in samples of urine, feces, blood, maternal milk, or body fat. These tests are not routinely available in a doctor's office because they require special equipment, but samples can be sent to special testing laboratories. These tests cannot determine exactly how much naphthalene, 1-methylnaphthalene, or 2-methylnaphthalene you were exposed to or predict whether harmful effects will occur. If the samples are collected within a day or two of exposure, then the tests can show if you were exposed to a large or small amount of naphthalene, 1-methylnaphthalene, or 2-methylnaphthalene.

Has the federal government made recommendations to protect human health?

The EPA recommends that children not drink water with over 0.5 parts per million (0.5 ppm) naphthalene for more than 10 days or over 0.4 ppm for any longer than 7 years. Adults should not drink water with more than 1 ppm for more than 7 years. For water consumed over a lifetime (70 years), the EPA suggests that it contain no more than 0.1 ppm naphthalene.

The Occupational Safety and Health Administration (OSHA) set a limit of 10 ppm for the level of naphthalene in workplace air during an 8-hour workday, 40-hour workweek. The National Institute for Occupational Safety and Health (NIOSH) considers more than 500 ppm of naphthalene in air to be immediately dangerous to life or health. This is the exposure level of a chemical that is likely to impair a worker's ability to leave a contaminate area and therefore, results in permanent health problems or death.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2005. Toxicological Profile for Naphthalene, 1-Methylnaphthalene, and 2-Methylnaphthalene (Update). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

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MERCURY
CAS # 7439-97-6

This fact sheet answers the most frequently asked health questions (FAQs) about mercury. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to mercury occurs from breathing contaminated air, ingesting contaminated water and food, and having dental and medical treatments. Mercury, at high levels, may damage the brain, kidneys, and developing fetus. This chemical has been found in at least 714 of 1,467 National Priorities List sites identified by the Environmental Protection Agency.

What is mercury?

(Pronounced mŭr′kyə-rē)

Mercury is a naturally occurring metal which has several forms. The metallic mercury is a shiny, silver-white, odorless liquid. If heated, it is a colorless, odorless gas.

Mercury combines with other elements, such as chlorine, sulfur, or oxygen, to form inorganic mercury compounds or "salts," which are usually white powders or crystals. Mercury also combines with carbon to make organic mercury compounds. The most common one, methylmercury, is produced mainly by microscopic organisms in the water and soil. More mercury in the environment can increase the amounts of methylmercury that these small organisms make.

Metallic mercury is used to produce chlorine gas and caustic soda, and is also used in thermometers, dental fillings, and batteries. Mercury salts are sometimes used in skin lightening creams and as antiseptic creams and ointments.

What happens to mercury when it enters the environment?

- Inorganic mercury (metallic mercury and inorganic mercury compounds) enters the air from mining ore deposits, burning coal and waste, and from manufacturing plants.
- It enters the water or soil from natural deposits, disposal of wastes, and volcanic activity.
- Methylmercury may be formed in water and soil by small organisms called bacteria.
- Methylmercury builds up in the tissues of fish. Larger and older fish tend to have the highest levels of mercury.

How might I be exposed to mercury?

- Eating fish or shellfish contaminated with methylmercury.
- Breathing vapors in air from spills, incinerators, and industries that burn mercury-containing fuels.
- Release of mercury from dental work and medical treatments.
- Breathing contaminated workplace air or skin contact during use in the workplace (dental, health services, chemical, and other industries that use mercury).
- Practicing rituals that include mercury.

How can mercury affect my health?

The nervous system is very sensitive to all forms of mercury. Methylmercury and metallic mercury vapors are more harmful than other forms, because more mercury in these forms reaches the brain. Exposure to high levels of metallic, inorganic, or organic mercury can permanently damage the brain, kidneys, and developing fetus. Effects on brain functioning may result in irritability, shyness, tremors, changes in vision or hearing, and memory problems.

Short-term exposure to high levels of metallic mercury vapors may cause effects including lung damage, nausea,

vomiting, diarrhea, increases in blood pressure or heart rate, skin rashes, and eye irritation.

How likely is mercury to cause cancer?

There are inadequate human cancer data available for all forms of mercury. Mercuric chloride has caused increases in several types of tumors in rats and mice, and methylmercury has caused kidney tumors in male mice. The EPA has determined that mercuric chloride and methylmercury are possible human carcinogens.

How can mercury affect children?

Very young children are more sensitive to mercury than adults. Mercury in the mother's body passes to the fetus and may accumulate there. It can also can pass to a nursing infant through breast milk. However, the benefits of breast feeding may be greater than the possible adverse effects of mercury in breast milk.

Mercury's harmful effects that may be passed from the mother to the fetus include brain damage, mental retardation, incoordination, blindness, seizures, and inability to speak. Children poisoned by mercury may develop problems of their nervous and digestive systems, and kidney damage.

How can families reduce the risk of exposure to mercury?

Carefully handle and dispose of products that contain mercury, such as thermometers or fluorescent light bulbs. Do not vacuum up spilled mercury, because it will vaporize and increase exposure. If a large amount of mercury has been spilled, contact your health department. Teach children not to play with shiny, silver liquids.

Properly dispose of older medicines that contain mercury. Keep all mercury-containing medicines away from children.

Pregnant women and children should keep away from rooms where liquid mercury has been used.

Learn about wildlife and fish advisories in your area from your public health or natural resources department.

Is there a medical test to show whether I've been exposed to mercury?

Tests are available to measure mercury levels in the body. Blood or urine samples are used to test for exposure to metallic mercury and to inorganic forms of mercury. Mercury in whole blood or in scalp hair is measured to determine exposure to methylmercury. Your doctor can take samples and send them to a testing laboratory.

Has the federal government made recommendations to protect human health?

The EPA has set a limit of 2 parts of mercury per billion parts of drinking water (2 ppb).

The Food and Drug Administration (FDA) has set a maximum permissible level of 1 part of methylmercury in a million parts of seafood (1 ppm).

The Occupational Safety and Health Administration (OSHA) has set limits of 0.1 milligram of organic mercury per cubic meter of workplace air (0.1 mg/m^3) and 0.05 mg/m^3 of metallic mercury vapor for 8-hour shifts and 40-hour work weeks.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1999. Toxicological profile for mercury. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

LEAD

CAS # 7439-92-1

Division of Toxicology and Environmental Medicine ToxFAQs™ **August 2007**

This fact sheet answers the most frequently asked health questions (FAQs) about lead. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to lead can happen from breathing workplace air or dust, eating contaminated foods, or drinking contaminated water. Children can be exposed from eating lead-based paint chips or playing in contaminated soil. Lead can damage the nervous system, kidneys, and reproductive system. Lead has been found in at least 1,272 of the 1,684 National Priority List sites identified by the Environmental Protection Agency (EPA).

What is lead?

Lead is a naturally occurring bluish-gray metal found in small amounts in the earth's crust. Lead can be found in all parts of our environment. Much of it comes from human activities including burning fossil fuels, mining, and manufacturing.

Lead has many different uses. It is used in the production of batteries, ammunition, metal products (solder and pipes), and devices to shield X-rays. Because of health concerns, lead from paints and ceramic products, caulking, and pipe solder has been dramatically reduced in recent years. The use of lead as an additive to gasoline was banned in 1996 in the United States.

What happens to lead when it enters the environment?

❑ Lead itself does not break down, but lead compounds are changed by sunlight, air, and water.

❑ When lead is released to the air, it may travel long distances before settling to the ground.

❑ Once lead falls onto soil, it usually sticks to soil particles.

❑ Movement of lead from soil into groundwater will depend on the type of lead compound and the characteristics of the soil.

How might I be exposed to lead?

❑ Eating food or drinking water that contains lead. Water pipes in some older homes may contain lead solder. Lead can leach out into the water.

❑ Spending time in areas where lead-based paints have been used and are deteriorating. Deteriorating lead paint can contribute to lead dust.

❑ Working in a job where lead is used or engaging in certain hobbies in which lead is used, such as making stained glass.

❑ Using health-care products or folk remedies that contain lead.

How can lead affect my health?

The effects of lead are the same whether it enters the body through breathing or swallowing. Lead can affect almost every organ and system in your body. The main target for lead toxicity is the nervous system, both in adults and children. Long-term exposure of adults can result in decreased performance in some tests that measure functions of the nervous system. It may also cause weakness in fingers, wrists, or ankles. Lead exposure also causes small increases in blood pressure, particularly in middle-aged and older people and can cause anemia. Exposure to high lead levels can severely damage the brain and kidneys in adults or children and ultimately cause death. In pregnant women, high levels of exposure to lead may cause miscarriage. High-level exposure in men can damage the organs responsible for sperm production.

How likely is lead to cause cancer?

We have no conclusive proof that lead causes cancer in humans. Kidney tumors have developed in rats and mice that had been given large doses of some kind of lead compounds. The Department of Health and Human Services

(DHHS) has determined that lead and lead compounds are reasonably anticipated to be human carcinogens and the EPA has determined that lead is a probable human carcinogen. The International Agency for Research on Cancer (IARC) has determined that inorganic lead is probably carcinogenic to humans and that there is insufficient information to determine whether organic lead compounds will cause cancer in humans.

How can lead affect children?

Small children can be exposed by eating lead-based paint chips, chewing on objects painted with lead-based paint, or swallowing house dust or soil that contains lead.

Children are more vulnerable to lead poisoning than adults. A child who swallows large amounts of lead may develop blood anemia, severe stomachache, muscle weakness, and brain damage. If a child swallows smaller amounts of lead, much less severe effects on blood and brain function may occur. Even at much lower levels of exposure, lead can affect a child's mental and physical growth.

Exposure to lead is more dangerous for young and unborn children. Unborn children can be exposed to lead through their mothers. Harmful effects include premature births, smaller babies, decreased mental ability in the infant, learning difficulties, and reduced growth in young children. These effects are more common if the mother or baby was exposed to high levels of lead. Some of these effects may persist beyond childhood.

How can families reduce the risks of exposure to lead?

❑ Avoid exposure to sources of lead.

❑ Do not allow children to chew or mouth surfaces that may have been painted with lead-based paint.

❑ If you have a water lead problem, run or flush water that has been standing overnight before drinking or cooking with it.

❑ Some types of paints and pigments that are used as make-up or hair coloring contain lead. Keep these kinds of products away from children

❑ If your home contains lead-based paint or you live in an area contaminated with lead, wash children's hands and faces often to remove lead dusts and soil, and regularly clean the house of dust and tracked in soil.

Is there a medical test to determine whether I've been exposed to lead?

A blood test is available to measure the amount of lead in your blood and to estimate the amount of your recent exposure to lead. Blood tests are commonly used to screen children for lead poisoning. Lead in teeth or bones can be measured by X-ray techniques, but these methods are not widely available. Exposure to lead also can be evaluated by measuring erythrocyte protoporphyrin (EP) in blood samples. EP is a part of red blood cells known to increase when the amount of lead in the blood is high. However, the EP level is not sensitive enough to identify children with elevated blood lead levels below about 25 micrograms per deciliter (μg/dL). These tests usually require special analytical equipment that is not available in a doctor's office. However, your doctor can draw blood samples and send them to appropriate laboratories for analysis.

Has the federal government made recommendations to protect human health?

The Centers for Disease Control and Prevention (CDC) recommends that states test children at ages 1 and 2 years. Children should be tested at ages 3–6 years if they have never been tested for lead, if they receive services from public assistance programs for the poor such as Medicaid or the Supplemental Food Program for Women, Infants, and Children, if they live in a building or frequently visit a house built before 1950; if they visit a home (house or apartment) built before 1978 that has been recently remodeled; and/or if they have a brother, sister, or playmate who has had lead poisoning. CDC considers a blood lead level of 10 μg/dL to be a level of concern for children.

EPA limits lead in drinking water to 15 μg per liter.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2007. Toxicological Profile for lead (Update). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-800-232-4636, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

APPENDIX B

WEST NILE VIRUS/ST. LOUIS ENCEPHALITIS PREVENTION

WEST NILE VIRUS/ST. LOUIS ENCEPHALITIS PREVENTION

The following section is based upon information provided by the CDC Division of Vector-Borne Infectious Diseases. Symptoms of West Nile Virus include fever, headache, and body aches, occasionally with skin rash and swollen lymph glands, with most infections being mild. More severe infection may be marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis, and, rarely, death. Most infections of St. Louis encephalitis are mild without apparent symptoms other than fever with headache. More severe infection is marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, occasional convulsions (especially infants) and spastic (but rarely flaccid) paralysis. The only way to avoid infection of West Nile Virus and St. Louis encephalitis is to avoid mosquito bites. To reduce the chance of mosquito contact:

- Stay indoors at dawn, dusk, and in the early evening.
- Wear long-sleeved shirts and long pants whenever you are outdoors.
- Spray clothing with repellents containing permethrin or DEET (N, N-diethyl-meta-toluamide), since mosquitoes may bite through thin clothing.
- Apply insect repellent sparingly to exposed skin. An effective repellent will contain 35% DEET. DEET in high concentrations (greater than 35%) provides no additional protection.
- Repellents may irritate the eyes and mouth.
- Whenever you use an insecticide or insect repellent, be sure to read and follow the manufacturer's directions for use, as printed on the product.

APPENDIX C

REPORT FORMS

WEEKLY SAFETY REPORT FORM

Week Ending: _____ Project Name/Number: _____

Report Date: _____ Project Manager Name: _____

Summary of any violations of procedures occurring that week:

_____

_____

_____

Summary of any job related injuries, illnesses, or near misses that week:

_____

_____

_____

_____

Summary of air monitoring data that week (include and sample analyses, action levels exceeded, and actions taken):

_____

_____

_____

Comments:

_____

_____

_____

Name: _____ Company: _____

Signature: _____ Title: _____

INCIDENT REPORT FORM

Date of Report: _____

Injured: _____

Employer: _____

Site: _____ Site Location: _____

Report Prepared By: _____ _____
Signature Title

ACCIDENT/INCIDENT CATEGORY (check all that applies)

___Injury	___ Illness	___ Near Miss
__ Property Damage	___ Fire	___ Chemical Exposure
__ On-site Equipment	___ Motor Vehicle	___ Electrical
__ Mechanical	___ Spill	___ Other

DATE AND TIME OF ACCIDENT/INCIDENT: Narrative report of Accident/Incident: Identify: 1) actions leading to or contributing to the accident/incident; 2) the accident/incident occurrence; and 3) actions following the accident/incident.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

WITNESS TO ACCIDENT/INCIDENT:

Name:	_____	Company:	_____
Address:	_____	Address:	_____
Phone No.:	_____	Phone No.:	_____
Name:	_____	Company:	_____
Address:	_____	Address:	_____
Phone No.:	_____	Phone No.:	_____

INJURED - ILL:

Name: _____ SSN: _____

Address: _____ Age: _____

Length of Service: _____ Time on Present Job: _____

Time/Classification: _____

SEVERITY OF INJURY OR ILLNESS:

____ Disabling ___ Non-disabling ___ Fatality

____ Medical Treatment ___ First Aid Only

ESTIMATED NUMBER OF DAYS AWAY FROM JOB: _____

NATURE OF INJURY OR ILLNESS: _____

_____

_____

_____

CLASSIFICATION OF INJURY:

__ Abrasions _____ Dislocations ____ Punctures

__ Bites _____ Faint/Dizziness ____ Radiation Burns

__ Blisters _____ Fractures ____ Respiratory Allergy

__ Bruises _____ Frostbite ____ Sprains

__ Chemical Burns _____ Heat Burns ____ Toxic Resp. Exposure

__ Cold Exposure _____ Heat Exhaustion ____ Toxic Ingestion

__ Concussion _____ Heat Stroke ____ Dermal Allergy

__ Lacerations

Part of Body Affected: _____

Degree of Disability: _____

Date Medical Care was Received: _____

Where Medical Care was Received: _____

Address (if off-site): _____

(If two or more injuries, record on separate sheets)

PROPERTY DAMAGE:

Description of Damage: _____

_____

Cost of Damage: $ _____

ACCIDENT/INCIDENT LOCATION: _____

ACCIDENT/INCIDENT ANALYSIS: Causative agent most directly related to accident/incident (Object, substance, material, machinery, equipment, conditions)

_____

_____

_____

_____

Was weather a factor?:_____

_____

Unsafe mechanical/physical/environmental condition at time of accident/incident (Be specific):

_____

_____

_____

Personal factors (Attitude, knowledge or skill, reaction time, fatigue):

_____

_____

ON-SITE ACCIDENTS/INCIDENTS:

Level of personal protection equipment required in Site Safety Plan:

_____

_____

Modifications:

_____

Was injured using required equipment?:

_____

_____

If not, how did actual equipment use differ from plan?:

_____

_____

ACTION TAKEN TO PREVENT RECURRENCE: (Be specific. What has or will be done? When will it be done? Who is the responsible party to insure that the correction is made?

ACCIDENT/INCIDENT REPORT REVIEWED BY:

SSO Name Printed SSO Signature

OTHERS PARTICIPATING IN INVESTIGATION:

Signature Title

Signature Title

Signature Title

ACCIDENT/INCIDENT FOLLOW-UP: Date:

Outcome of accident/incident:

Physician's recommendations:

Date injured returned to work:
Follow-up performed by:

Signature Title

ATTACH ANY ADDITIONAL INFORMATION TO THIS FORM

APPENDIX D

EMERGENCY HAND SIGNALS

EMERGENCY SIGNALS

In most cases, field personnel will carry portable radios for communication. If this is the case, a transmission that indicates an emergency will take priority over all other transmissions. All other site radios will yield the frequency to the emergency transmissions.

Where radio communications is not available, the following air-horn and/or hand signals will be used:

EMERGENCY HAND SIGNALS

OUT OF AIR, CAN'T BREATH!

Hand gripping throat

LEAVE AREA IMMEDIATELY, NO DEBATE!

(No Picture) Grip partner's wrist or place both hands around waist

NEED ASSISTANCE!

Hands on top of head

OKAY! – I'M ALL RIGHT!

- I UNDERSTAND!

Thumbs up

NO! - NEGATIVE!

Thumbs down

Appendix C
Findings for Construction Management Plan

APPENDIX C
FINDINGS FOR CONSTRUCTION MANAGEMENT PLAN

FINDING B-3: *Since there are numerous soil types located on the Project Site with varying degrees of erodibility, to avoid significant adverse impacts that could be associated with the amount of cut-and-fill of differing soil types moved around the site, any Special Permit/Site Plan approval shall include a condition that requires the locations and estimates of amounts of soil to be moved be approved by the Commissioner of Public Works and included in the Construction Management Plan so that the amounts and types of soil moved on or brought to the Project Site can be confirmed and monitored during the construction process (See also Finding K-1 and K-2).*

FINDING D-1: *To avoid or mitigate significant adverse impacts from construction to the maximum extent practicable, any Special Permit/Site Plan approval shall require approval of a Construction Management Plan pursuant to the City's Construction Management Protocol. The final Construction Management Plan shall be subject to review and acceptance by the City staff and/or consultants appropriately designated by the Common Council in any Special Permit/Site Plan approval.*

FINDING D-3: *To avoid or mitigate, to the maximum extent practicable, significant adverse impacts of the displacement of mice, rats and other vermin from the Project Site onto nearby properties due to construction on the Project Site and alteration of the land on the Conservancy portion of the Project Site to a new habitat, any Special Permit/Site Plan approval shall include a condition that the Construction Management Plan include a requirement that FASNY retain the services of an exterminator to: (1) treat the existing club house building on Parcel A prior to any demolition activity; (2) use baiting and trapping as necessary; and (3) closely monitor the Project Site, including soliciting information from abutting property owners throughout the construction phase to ensure that there is no increase in the rodent population during construction that would affect homeowners. Any Special Permit/Site Plan approval shall provide that if such an increase is detected, FASNY shall provide further treatment of the Project Site and the properties of affected homeowners.*

FINDING K-12: *To mitigate, to the maximum extent practicable, the impacts of Greenhouse Gas emissions caused by the development and operation of the FASNY School, FASNY must address Greenhouse Gas mitigation in the following documents required as part of any revised Special Permit/Site Plan application for any Modified Proposed Project, regardless of access option, for review and approval by the Common Council with input from designated City staff:*

1. Greenhouse Gas Reduction Plan as part of the Transportation Management Plan;

2. Greenhouse Gas Reduction Plan as part of the Coordinated Review Sustainability Checklist;

3. Greenhouse Gas Reduction Plan as part of the Construction Management Plan; and

4. Greenhouse Gas Reduction Plan as part of the Solid Waste Management Plan.

FINDING L-16: *The Applicant has acknowledged in the DEIS, at pages 15-9 and 15-10, that noise from construction activity could result in potential significant adverse impacts during the period of construction. Construction period impacts are considered temporary under SEQRA. However, due to the extended period of construction anticipated for the two phases of this Project, construction noise impacts will be a longer term event. The noise impacts must be mitigated throughout the construction phases to the maximum extent practicable pursuant to the*

City's Construction Management Protocol. The Construction Management Protocol, which shall be incorporated as a condition of any Special Permit/Site Plan approval shall require, among its provisions, that the Applicant prepare, and have approved by the Commissioner of Building, Commissioner of Public Works, Commissioner of Planning, Deputy Commissioner of Parking for Traffic Engineering, and Environmental Officer prior to the issuance of any demolition, building or site disturbance permits, a detailed Construction Management Plan that will include requirements for noise mitigation during construction, and it shall apply to construction workers, including, but not limited to, parking and access to the Site; operations and sound attenuation of equipment; hours of operation; and use of buffering techniques to limit sound dispersion. The Construction Management Plan shall also detail how it will be enforced.

FINDING M-1: *To mitigate, to the maximum extent practicable, potential significant adverse impacts from the disturbance of contaminated soil on the site, the following actions need to be taken by FASNY and documented in the Construction Management Plan, which shall be subject to approval as a condition of any Special Permit/Site Plan approval:*

1. Classify all soils as soils to "remain in place" and soils "to be removed" during construction;

2. To manage disturbance of known contaminated soil and to provide for a contingency plan to address other sources or areas of contamination, if any, encountered during construction activities, ensure that all procedures involving disturbance of soil on the Project Site are documented in a "Construction Phase Environmental Health and Safety Plan (CHASP) approved by the Commissioner of Public Works, and made a part of the Construction Management Plan;

3. Ensure that all work involving disturbance of contaminated soils is under the supervision of licensed professionals with oversight by appropriately designated City staff and/or consultants;

4. Provide in the CHASP and Construction Management Plan that FASNY shall have responsibility for all work and costs associated with the preparation and implementation of the CHASP, including sampling and monitoring, and cost of supervision by licensed professionals;

5. Provide in the CHASP and Construction Management Plan that, if the City does not have adequate staffing to ensure full oversight of soil disturbance activities, FASNY shall fund the cost of necessary licensed professional(s) to assist the City in such oversight; and

6. Ensure full compliance with all local, State and Federal requirements for health and safety when disturbing any soil on the site.

FINDING N-2: *Without appropriate controls, the construction of the FASNY School could have significant adverse impacts on the Project Site and the surrounding community. To mitigate such significant adverse impacts, the construction of the project shall be regulated and controlled pursuant to a Construction Management Plan as required by the City's Construction Management Protocol, which shall be approved as part of any Special Permit/Site Plan approval. The Construction Management Protocol shall outline the topics to be addressed in the Construction Management Plan, including among other things, the Construction Phasing Plan (CPP), the Construction-Phase Environmental Health and Safety Plan (CHASP), the Erosion and Sedimentation Control Plan (ESCP), the site restoration plan (SRP), and the Stormwater Pollution Prevention Plan (SWPPP). The requirement of the Construction Management Plan shall be a requirement of any Special Permit/Site Plan approval. Such approval shall identify that the final Construction Management Plan, after full technical review shall be subject to acceptance by appropriately designated City staff and/or consultants prior to the*

issuance of any permits for demolition, construction or any excavation or alteration of the Project Site. Furthermore, designated staff and/or consultants, depending on the situation and jurisdiction, may issue a stop work order if, upon inspection, required practices are not being followed. The draft Construction Management Plan prepared by the Applicant and included in the DEIS is not approved.

FINDING N-3: *As noted hereinabove, construction can cause significant adverse impacts on surrounding residential properties if not properly mitigated. To mitigate significant adverse impacts from construction, the Construction-Phase Environmental Health and Safety Plan (CHASP) shall be included in the Construction Management Plan and approved as part of the CMP. The CMP and CHASP shall outline measures to ensure that all excavated soil and fill brought to the Project Site are properly handled. Fill being brought to the Project Site must be tested and test results reviewed and approved by the Commissioner of Public Works before the fill is placed on the Project Site. The Applicant shall be required to pay the cost of the appropriate testing and evaluation procedures regarding soil and all fill brought to the Project Site. The Construction Management Plan and CHASP shall include provisions for the handling and disposing of any contaminated soil encountered during any excavations on the Project Site and for the protection of workers and the surrounding community. This will include air quality monitoring if determined necessary by the appropriately designated City staff. The Stormwater Pollution Prevention Plan (SWPPP), also made a part of the Construction Management Plan, shall include strict erosion and sediment control measures, including control of dust. All of the requirements set forth in this Finding N-3 would, as a condition of any Special Permit/Site Plan approval, need to be required to be incorporated in the Construction Management Plan…*

FINDING N-6: *The Common Council recognizes that construction of the Project will cause certain potentially significant adverse impacts during the construction period, including noise and vibration from construction equipment, construction vehicles, and delivery vehicles traveling to and from the Project Site. Noise levels caused by construction activities will vary, depending on the phase of construction — demolition, excavations, foundation, construction of the structures, etc.— and the specific task being undertaken. The extent to which these adverse impacts are significant depends on the manner and degree to which they are mitigated. The City of White Plains has recognized this in the Municipal Code. The Code requires that all construction activities be conducted in full compliance with its regulations (Municipal Code, Chapter 3-4, "Noise Pollution"), including local day and hour construction limitations. The hours of operation of construction as set forth in the White Plains Municipal Code, Chapter 3-4, "Noise Pollution," are as follows: construction activities shall occur only between the hours of 7:00 AM and 7:00 PM on weekdays, and between the hours of 9:00 AM and 7:00 PM on Saturdays. per the City of White Plains Municipal Code, Chapter 3-4, "Noise Pollution," loading or unloading of vehicles shall occur only between the hours of 8:00 AM and 10:00 PM on any day of the week. However, due to the location of the Project within a low density residential area with little ambient noise during evening hours, potential significant adverse noise impacts from deliveries should be limited to the same hours as construction for weekdays and weekends. The restriction of the hours for deliveries to the Project Site shall be a condition of any Special Permit/Site Plan approval.*

The City also requires that construction projects adhere to the City's Construction Management Protocol. The Construction Management Plan required by that Protocol must be submitted to the City for review and approval as described in Finding N-2. The City and

NYS and Federal requirements also mandate that certain classifications of construction equipment and motor vehicles be used to minimize adverse impacts. Thus, construction equipment to be permitted on the Project Site must meet specific noise emission standards. No blasting or rock chipping is presently contemplated to take place on the Project Site. However, to mitigate to the maximum extent practicable any potential significant adverse impacts of such activity, if blasting or rock chipping were found to be necessary, the Construction Management Plan must provide for the notification of property owners within 200 feet of the Property of any extraordinary noise that might occur. If blasting is required, the activity must comply with all applicable regulations, including Section 7-3-60 of the City's Municipal Code, "Rock Excavations," and City Department of Public Safety's blasting protocol, which shall be incorporated into the Construction Management Plan.

FINDING N-7: *FASNY has indicated on page 15-4 of the DEIS, that at least the following construction equipment would be required for construction of the project: excavators, bulldozers, backhoes, graders, and dump trucks. The use of this equipment can constitute a significant adverse impact on surrounding residential properties if not properly mitigated. To mitigate the potential significant impacts of the operation and use of such equipment, and such other equipment as is determined necessary, all work, including but not limited to the erection, construction (including excavating), demolition, alteration or repair of any building or structure, the operation of any machinery, commercial motor vehicle, equipment, pump, or similar mechanical device, the loading or unloading of vehicles, or deliveries shall be performed in accordance with the City of White Plains Municipal Code, Chapter 3-4, "Noise Pollution" and the Construction Management Plan. The Construction Management Plan must include a detailed construction phasing plan (CPP), which CPP shall include, among other things, the types of equipment to be used during each phase, the permitted hours of operation, vehicle idling restrictions, the location and access to parking for construction workers, the route construction workers, equipment and dump/delivery trucks must take to the Project Site, the location of material stockpiles on the Project Site, including loading and unloading and staging areas, vehicle wash-down areas, and such other information as is deemed necessary. See also Findings Section L "Noise." As noted hereinabove, the requirements for and the content of the Construction Management Plan shall be a requirement of any Special Permit/Site Plan approval.*

FINDING N-8: *As noted in the FEIS (Response 3.15-3), construction operations will cause localized increases in mobile source emissions. This can constitute a significant adverse impact on surrounding residential properties if not properly mitigated. To mitigate the potentially significant adverse impact of such emissions, the Construction Management Plan shall include specific language, as provided by the Commissioner of Public Works, regarding use of ultra-low sulfur fuels for all on-Site construction equipment, strict enforcement of idling regulations, including a prohibition of delivery truck and/or other equipment engines idling during loading, unloading or other inactive times. See also Findings Section K "Air Quality."*

FINDING N-9: *Despite the efforts of the City and its Departments to appropriately regulate construction and mitigate potential significant adverse impacts of construction on adjacent and nearby properties and roads, such as: (a) construction noise; (b) air quality impacts; (c) hours of operation of construction; (d) fugitive dust from soil disturbance and grading; (e) problems with erosion and sediment controls due to adverse weather conditions or maintenance problems; and (f) rodent and pest problems due to habitat disruptions, such impacts can constitute a significant adverse impact on surrounding residential properties if those responsible for construction activities on the Project Site are not thoroughly informed of*

and properly execute their responsibilities under the Construction Management Plan. Therefore, to minimize potential significant adverse impacts on nearby properties, the Construction Management Plan shall require that FASNY take the following actions with regard to informing properties owners within 200 feet of the Project Site of activities on the Site, and informing construction contractors and their workers of their responsibilities on the Site:

1. The principal contractors and construction manager for FASNY must be represented at the meetings with appropriately designated City staff to prepare the Construction Management Plan, and shall be fully advised of its contents and requirements.

2. After approval of the Construction Management Plan, and prior to the issuance of any building or excavation permits for each construction, FASNY and its construction management team, including representatives of all contractors and professionals involved in the construction of the Project, shall meet with the appropriately designated City staff along with any professionals retained by the City to assist in the monitoring of construction activities, to review the Project's Construction Management Plan, and all plans contained therein and required as a part thereof, to ensure that all responsible parties understand their responsibilities under the Construction Management Plan for the specific construction phase.

3. The Construction Management Plan, as required by the Protocol, may be updated as necessary.

4. After the approval of the Construction Management Plan, and after the coordination meeting(s) with FASNY and its construction management/contractor team for each construction phase, FASNY and its construction management/contractor team, along with the appropriately designated City staff and/or consultants designated in the Construction Management Plan who will be involved in the monitoring of the construction of the Project, shall hold an informational meeting open to residents living within 200 feet of the Project Site to describe the construction process for the specified construction phase.

5. FASNY shall make copies of the Construction Management Plan available to the residents on-line and it shall be posted on the City's website. A hard copy of the Construction Management Plan for each phase shall be maintained in the Construction Office on-Site. Further, FASNY shall provide one or more methods for communication to a responsible person(s) designated in the Construction Management Plan (e.g., telephone number, e-mail address) for use by neighbors and/or the City of White Plains to communicate any concerns or observations during the construction period. The contact names, telephone numbers and/or e-mail addresses shall be posted on the Project Site in a location visible and accessible without entering any construction zone. FASNY shall share any communications received using these channels with the City of White Plains, the City officials designated in the Construction Management Plan, and shall coordinate with the City of White Plains on the appropriate response to the issue(s) raised. FASNY shall work with the City officials designated in the Construction Management Plan and surrounding neighborhood associations to schedule periodic meetings to inform the neighbors of scheduled Project construction and anticipated neighborhood impacts. FASNY shall coordinate a public outreach plan that would provide on-going information about the status of construction activities and the anticipated schedule of construction activities.

6. Authorization for the appropriately designated City staff to retain a building construction supervisor working under the direction of the Commissioner of Building and a licensed

professional to monitor soil disturbance and storm water impacts under the supervision of the Commissioner of Public Works, with funding for such positions by FASNY shall be provided for in the Construction Management Protocol, as part of any Special Permit/Site Plan approval.

FINDING N-11: *Over time, disturbed soils can constitute an increasingly significant adverse impact on surrounding residential properties if not properly mitigated. To mitigate potential significant adverse impacts of disturbed soils due to any lapse in construction activity on the Project Site for a period exceeding 12 months, FASNY shall be required to submit a site restoration plan (SRP) and post a site restoration bond (Restoration Bond) in an amount established by the City to cover the cost to regrade and replant any disturbed areas. Such SRP must be accepted by the Tree Preservation Committee and made a part of the Construction Management Plan. This requirement shall be made a condition of any Special Permit/Site Plan approval.*

FINDING N-12: *Fugitive dust can constitute a significant adverse impact on surrounding residential properties if not properly mitigated. It must, therefore, be closely monitored and mitigated as directed in the ESCP and SWPPP. As summarized in Chapter 15 of the DEIS, these measures shall include, but are not limited to the spraying of water on dusty surfaces and using drainage diversion methods (silt fences) to minimize soil erosion during Site grading. The ESCP shall be included in the Construction Management Plan and enforced as part of the SWPPP through the Commissioner of Public Works. This requirement shall be made a requirement of any Special Permit/Site Plan approval.*

FINDING N-13: *Rodent and pest problems on construction sites can constitute significant adverse impacts on surrounding residential properties if not properly mitigated. To mitigate such adverse impacts, FASNY must provide, and any Special Permit/Site Plan approval shall require, a protocol for addressing rodent and pest problems, including retaining a pest control company and monitoring conditions on the Project Site and on adjacent properties. The protocol shall be included in the Construction Management Plan, and strictly enforced.*

FINDING N-14: *The location of staging areas in relation to residential properties adjacent to such areas can constitute significant adverse impacts on surrounding residential properties, particularly due to noise, if not properly mitigated. To mitigate any adverse impacts, the Construction Management Plan shall require that all materials and equipment staging areas be located a minimum of 75 feet from all residential property lines and street rights-of-way.*

FINDING N-15: *The parking of construction worker vehicles on local neighborhood streets would have a significant adverse impact on surrounding residential properties and must be avoided. To avoid construction workers from parking on neighborhood streets, Any Special Permit/Site Plan approval shall require that FASNY provide to appropriately designated City staff and/or consultants an on-Site parking plan which includes the routing of construction worker vehicles to the Project Site, and which plan must be approved as part of the Construction Management Plan and strictly enforced. A construction worker parking plan must be approved for each phase of construction. The construction worker parking plan cannot include parking on City streets or accessing the Project Site via local streets*

FINDING N-18: *FASNY has not provided a construction worker parking plan for MPP/North Street and MPP/Bryant Avenue. The FEIS states at Chapter 1.0, page 1.0-27 "The construction phasing plan described below is specific to the MPP/Ridgeway.*

Construction phasing for the MPP/North Street and MPP/Bryant Avenue would be similar, but would include a separate sub-phase for construction of the new access driveway. The North Street or Bryant Avenue access driveway could ultimately be utilized during the course of construction as a construction entrance. However during the initial phases of construction that would involve earthwork, demolition, utility relocation and building foundations, Ridgeway and Hathaway Lane are proposed to serve as the primarily construction entrance. The new driveway from either North Street or Bryant Avenue would be constructed following the initial construction sub-phases and is anticipated to be open for construction access during the latter sub-phases of Phase I." Based on the information provided in the FEIS, FASNY has not provided a construction worker parking plan demonstrating that it can accommodate construction worker parking on-Site for Phase I or Phase II of the Campus construction on Parcels A and D for MPP/North Street or MMPP/Bryant Avenue. Construction worker parking on surrounding local streets and neighborhoods has not been demonstrated by FASNY to have been adequately. FASNY must provide plans demonstrating that parking for all construction workers in all sub-phases of Phase I and Phase II can be accommodated on-Site, or at a reasonable off-site location with transportation from the off-site location to the Project Site. Such Construction Worker Parking Plan would then need to be specifically approved as part of any Special Permit/Site Plan approval as described in FINDING N-21. The approved plans shall be incorporated in the Construction Management Plan.

FINDING N-21: *FASNY proposes to access the Project Site for construction equipment, construction workers and deliveries from Ridgeway onto Hathaway Lane for all phases of the MPP/Ridgeway option and for most of Phase I under the MPP/North Street or MPP/Bryant Avenue access options. If not properly mitigated, the construction equipment, deliveries and workers coming and leaving the site from Hathaway and Ridgeway, and partially from North Street or Bryant Avenue, depending on the MPP access option, the travel routes of construction equipment, deliveries and construction workers to and from the Project Site, and the timing of such traffic will have significant adverse impacts on traffic on Ridgeway, Hathaway Lane, and streets accessing Ridgeway and/or the new access point(s) on North Street or Bryant Avenue, under the MPP/North Street or MPP/Bryant Avenue. To mitigate these potentially significant adverse construction traffic impacts, FASNY must provide a Construction Traffic Management Plan for approval by the Common Council as part of the approval of any Special Permit/Site Plan, which Construction Traffic Management Plan shall be included as part of the approved Construction Management Plan.*

Attachment A
Site Logistics Plan

French-American School of New York [Site Logistics Plan]

[Weeks 1-8] Silt Fence, Construction Fence, Site Clearing, Abatement & Demolition

Phase 1A.1 - Job Setup / Mobilization / Abatement & Demolition

Turner

French-American School of New York [Site Logistics Plan]

[Weeks 9-12] Foundations, Steel, Site Utilities, and Temporary Sediment Basin

Phase 1A.2 - Building Construction and Stormwater Management

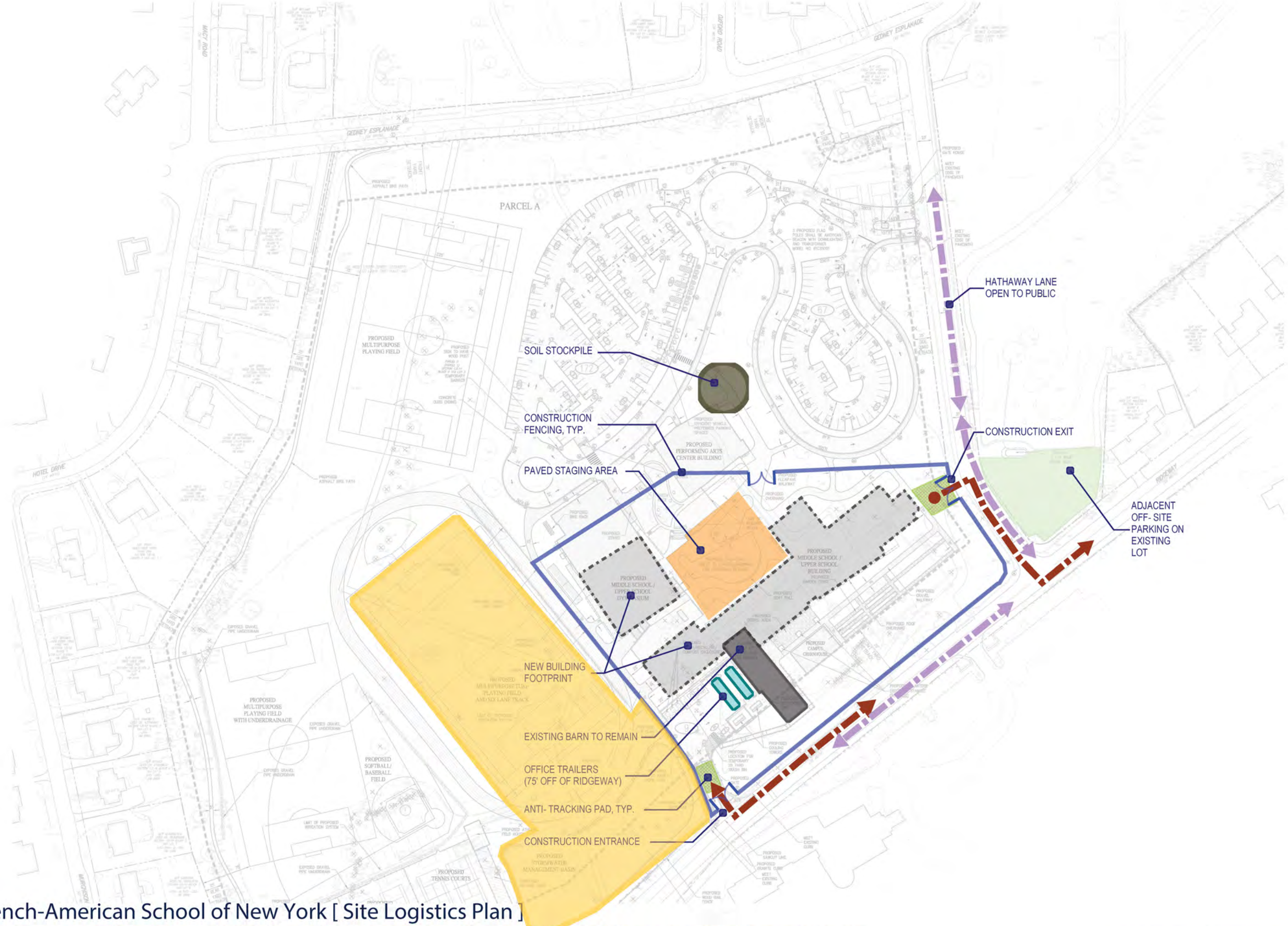
Turner

French-American School of New York [Site Logistics Plan]

[Weeks 13-19] Foundations, Steel, Site Utilities, Re-route sanitary main, and West Field

Phase 1A.3 - Building Construction and West Field

Turner



French-American School of New York [Site Logistics Plan]

[Weeks 20-26] Building Enclosure, MEP Rough-in, Site Utilities, and Stormwater Management

Phase 1A.4 - Building Construction and Stormwater Management

Turner

French-American School of New York [Site Logistics Plan]

[Weeks 27-45] Interior Partitions, MEP Rough-In, North Parking Grade & Binder

Phase 1A.5 - Building Construction and North Parking

Turner

French-American School of New York [Site Logistics Plan]

[Weeks 46-60] Interior Fit-Out & East Parking Lot Grade & Binding

Phase 1A.6 - Building Construction / East Parking

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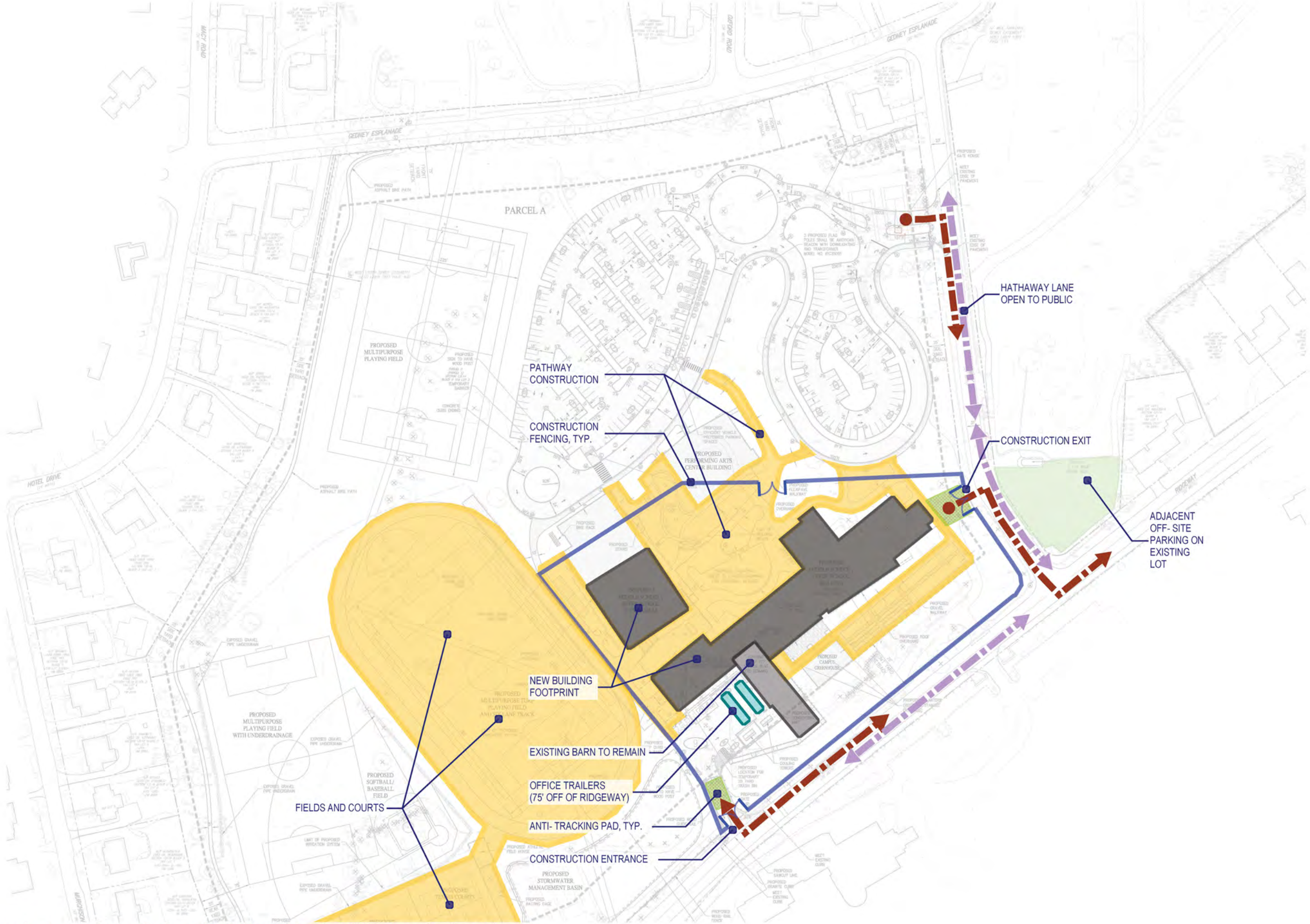


French-American School of New York [Site Logistics Plan]

[Weeks 61-78] Building Finishes, Hardscape, East Field, Track & Tennis Courts

Phase 1A.7 - Building Construction & Athletic Field / Courts

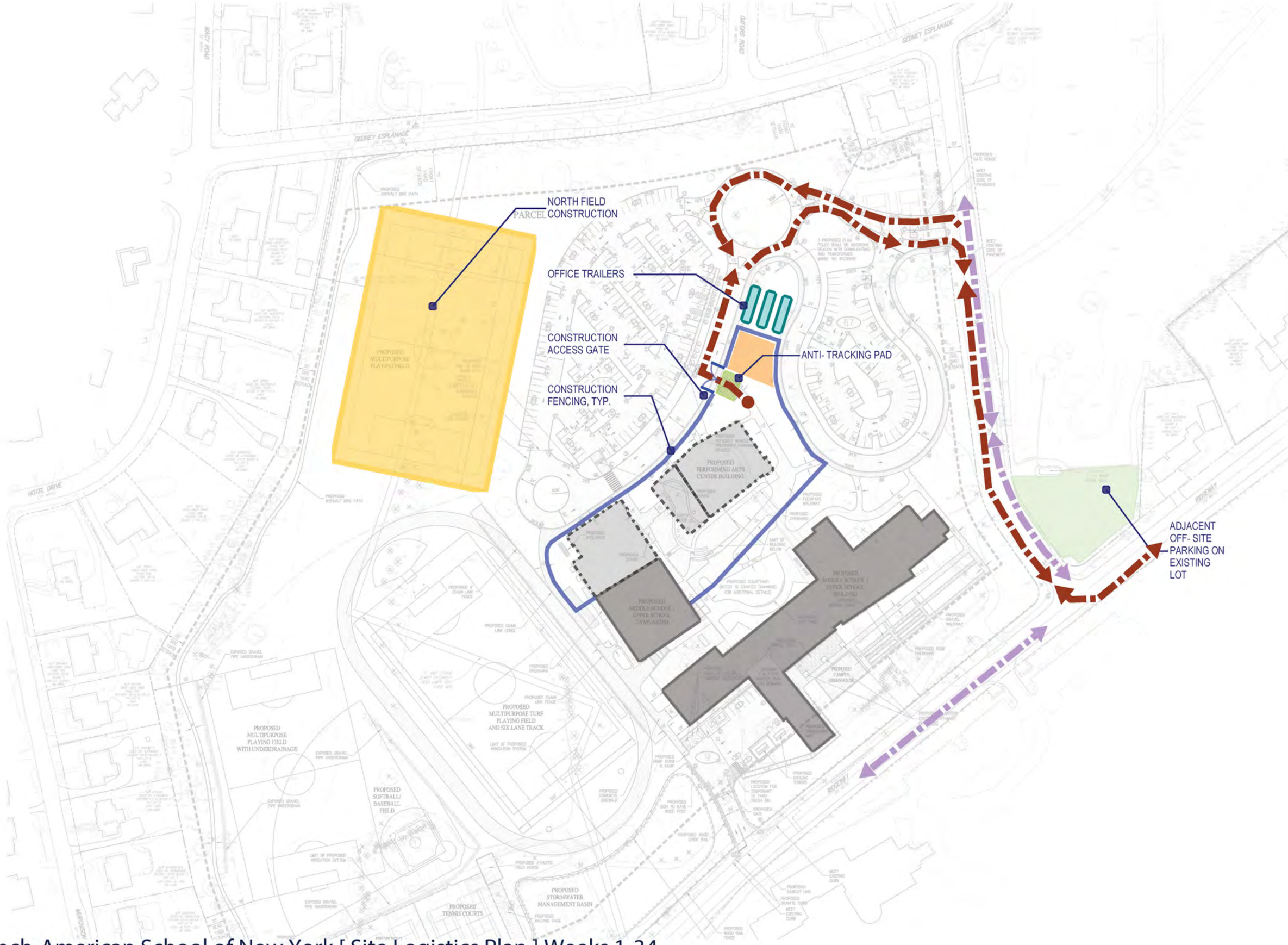
Turner

French-American School of New York [Site Logistics Plan]

[Weeks 79-87] Occupancy, Landscaping & Commissioning

Phase 1A.8 - Building Completion and Landscaping

Turner

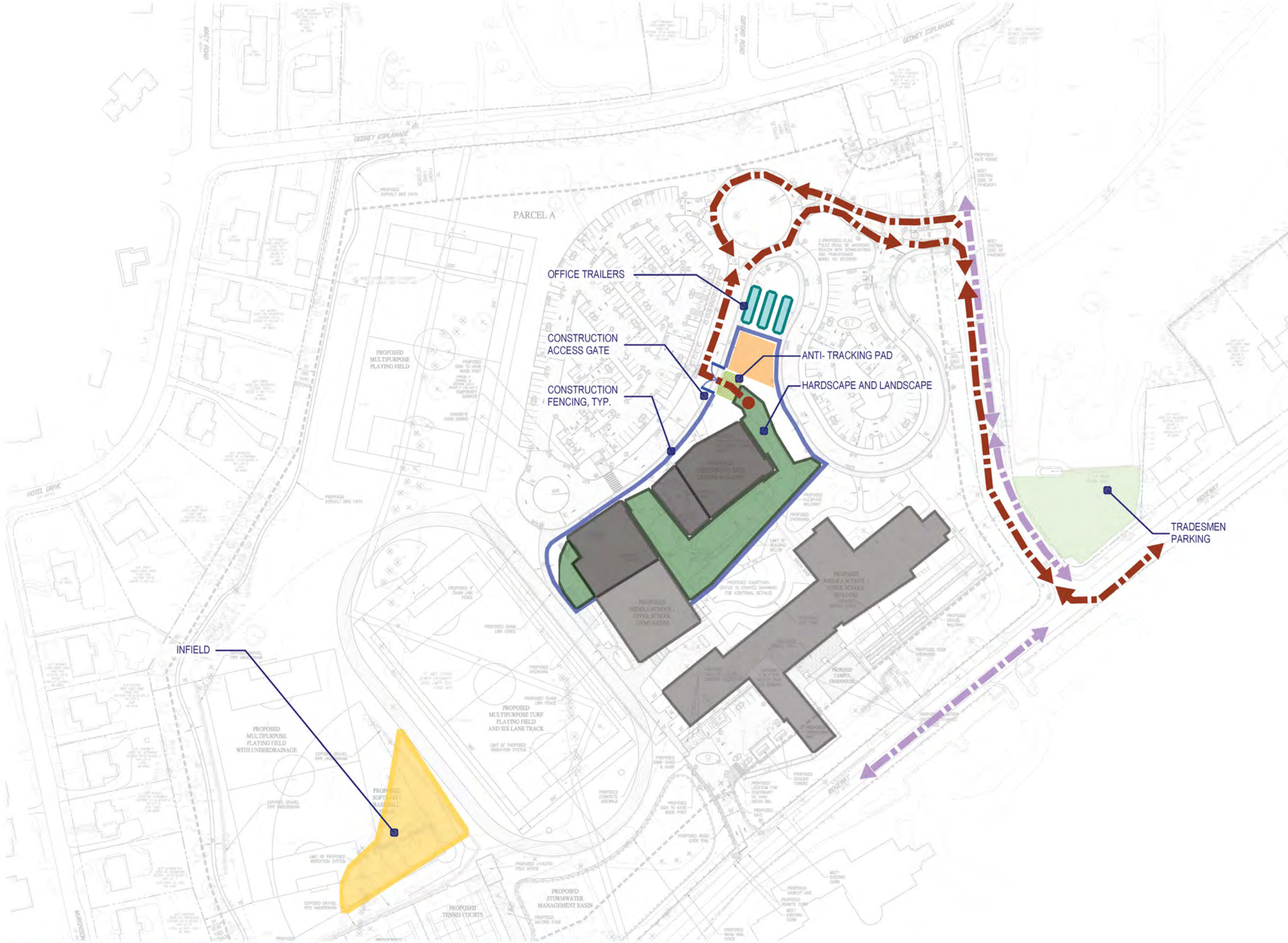


French-American School of New York [Site Logistics Plan] Weeks 1-34

Job Setup & Construction: Erosion Control, Construction Fence, Building Construction

Phase 2B.1 - Gym Addition & Performing Arts Center

Turner



French-American School of New York [Site Logistics Plan] Weeks 35-68

Building Construction: Fit-Out, Finishes, Hardscape, Landscape, Infield, & Commissioning

Phase 2B.2 - Gym Addition & Performing Arts Center

Turner

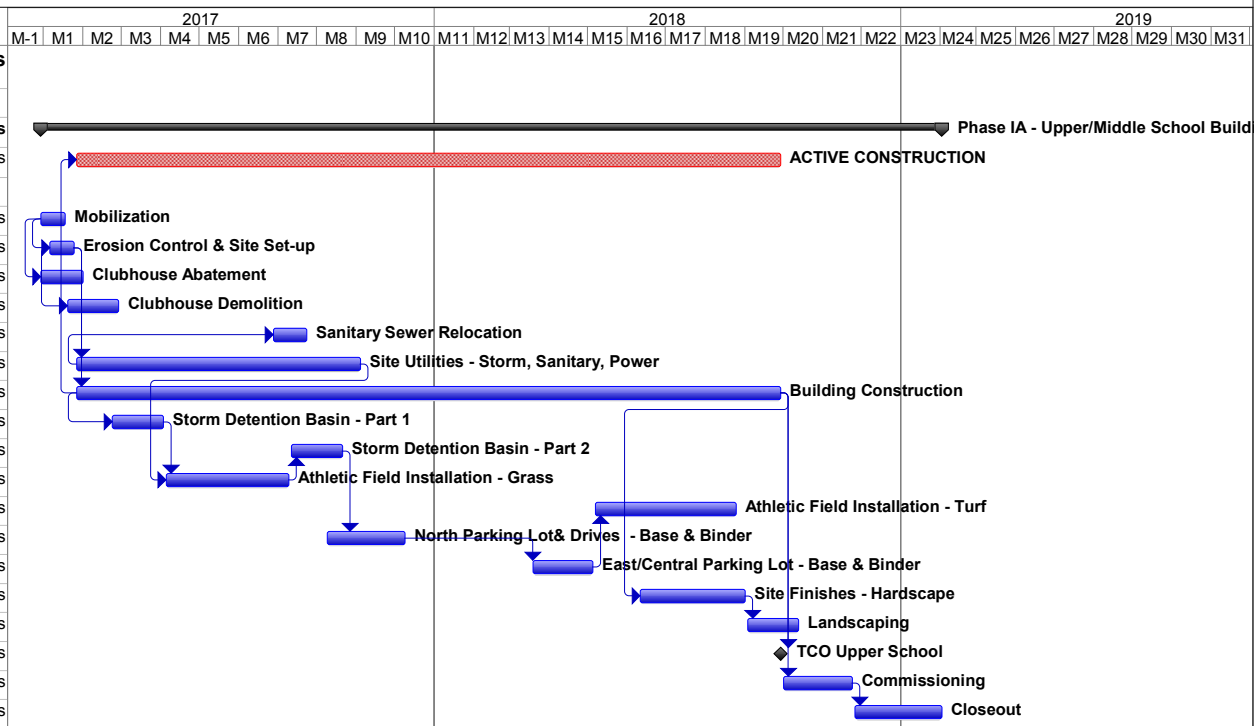
Attachment B
Phase IA Construction Schedule

TURNER CONSTRUCTION CO.

FRENCH-AMERICAN SCHOOL OF NEW YORK
Ridgeway Campus
White Plains, NY

10/25/16

ID	Task Name	Duration
1	**FASNY - Ridgeway Campus Phase IA**	**101 wks**
2		
3	**Phase IA - Upper/Middle School Building & Fields**	**101 wks**
4	**ACTIVE CONSTRUCTION**	79 wks
5		
6	Mobilization	3 wks
7	Erosion Control & Site Set-up	3 wks
8	Clubhouse Abatement	5 wks
9	Clubhouse Demolition	6 wks
10	Sanitary Sewer Relocation	4 wks
11	Site Utilities - Storm, Sanitary, Power	32 wks
12	Building Construction	79 wks
13	Storm Detention Basin - Part 1	6 wks
14	Storm Detention Basin - Part 2	6 wks
15	Athletic Field Installation - Grass	14 wks
16	Athletic Field Installation - Turf	16 wks
17	North Parking Lot& Drives - Base & Binder	9 wks
18	East/Central Parking Lot - Base & Binder	7 wks
19	Site Finishes - Hardscape	12 wks
20	Landscaping	6 wks
21	TCO Upper School	0 wks
22	Commissioning	8 wks
23	Closeout	10 wks
24		
25	NOTE: Schedule durations are approximate and subject to weather and other conditions that arise in the normal course of construction.	0 wks
26	This schedule also assumes that the 5 acre disturbance limitation will be relaxed to accommodate the seasonal limitations imposed by the 18 month construction schedule.	0 wks



Preliminary Construction Schedule

Task		External Tasks		Duration-only	
Milestone		Project Summary		Manual Summary Rollup	
Summary		Group By Summary		Manual Summary	
Rolled Up Task		Inactive Task		Start-only	
Rolled Up Milestone		Inactive Milestone		Finish-only	
Rolled Up Progress		Inactive Summary		Progress	
Split		Manual Task		Deadline	

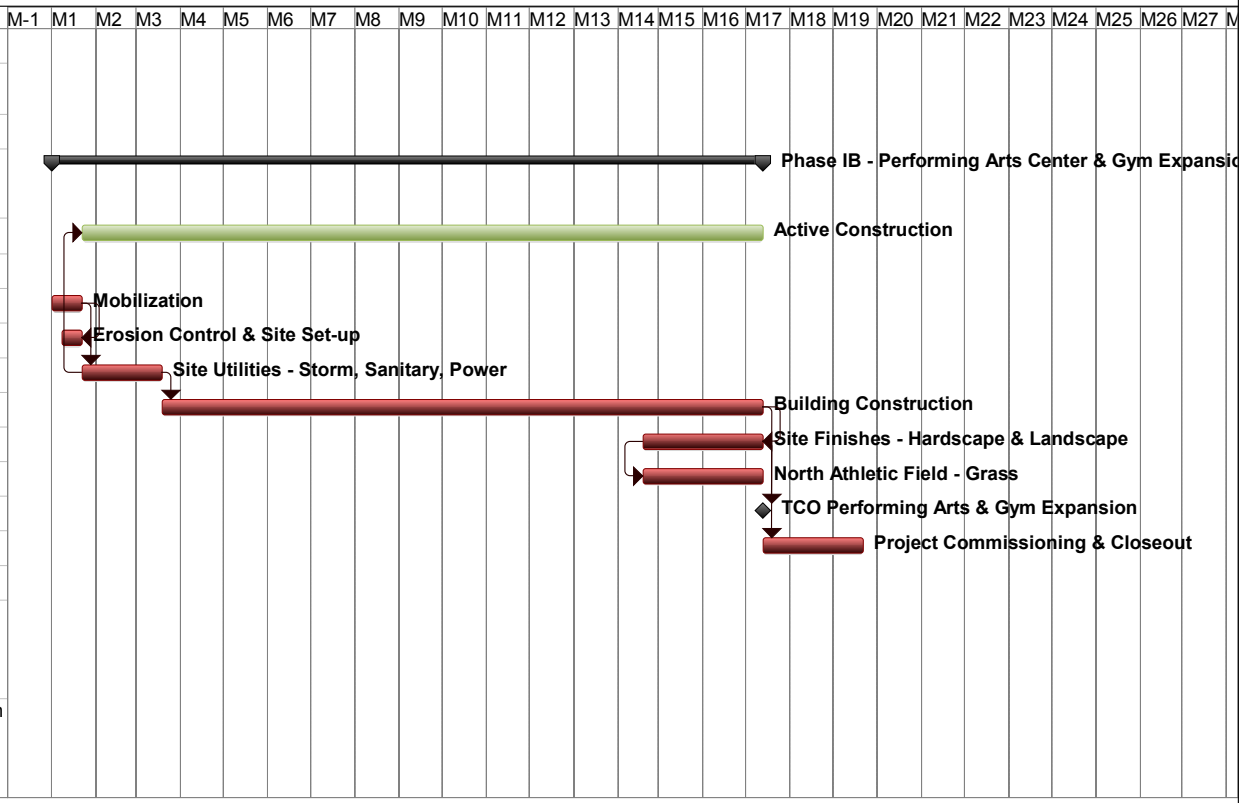
Attachment C
Phase IB Construction Schedule

Turner Constrauction Co.

FRENCH-AMERICAN SCHOOL OF NEW YORK
Ridgeway Campus
White Plains, NY

10/25/16

ID	Task Name
1	
2	**FASNY - Ridgeway Campus Phase IB**
3	
4	**Phase IB - Performing Arts Center & Gym Expansion**
5	**Active Construction**
6	
7	Mobilization
8	Erosion Control & Site Set-up
9	Site Utilities - Storm, Sanitary, Power
10	Building Construction
11	Site Finishes - Hardscape & Landscape
12	North Athletic Field - Grass
13	TCO Performing Arts & Gym Expansion
14	Project Commissioning & Closeout
15	
16	NOTE: Schedule durations are approximate and subject to weather and other conditions that arise in the normal course of construction.
17	This schedule also assumes that the 5 acre disturbance limitation will be relaxed to accommodate the seasonal limitations imposed by the 18 month construction schedule.



Preliminary Construction Schedule

Task		Inactive Milestone	
Milestone		Inactive Summary	
Summary		Manual Task	
Rolled Up Task		Duration-only	
Rolled Up Milestone		Manual Summary Rollup	
Rolled Up Progress		Manual Summary	
Split		Start-only	
External Tasks		Finish-only	
Project Summary		Progress	
Group By Summary		Deadline	
Inactive Task			