

COUNTY OF FAIRFAX, VIRGINIA

SPECIAL PERMIT RESOLUTION OF THE BOARD OF ZONING APPEALS

VULCAN CONSTRUCTION MATERIALS LP, SPA 82-V-091-06 Appl. under Sect(s). 3-103, 3-C03, and 5-603 of the Zoning Ordinance to amend SP 82-V-091 previously approved for stone quarrying, crushing, sales, and related associated quarrying activities to permit renewal, modification of development conditions, increase in land area, and site modifications. Located at 10000 Ox Rd, Lorton, 22039, on approx. 419.96 ac. of land zoned I-6, R-C, R-1, and NR. Mt. Vernon District. Tax Map 106-4 ((1)) 56 pt. and 56A pt., 20B pt., 106-3 ((1)) 4B and 9, 112-2 ((1)) 8 pt., 9 pt., and 11, 12, and 14, and a portion of Peniwill Drive proposed to be acquired, vacated, or abandoned. Mr. Byers moved that the Board of Zoning Appeals adopt the following resolution:

WHEREAS, the captioned application has been properly filed in accordance with the requirements of all applicable State and County Codes and with the by-laws of the Fairfax County Board of Zoning Appeals; and

WHEREAS, following proper notice to the public, a public hearing was held by the Board on June 3, 2015; and

WHEREAS, the Board has made the following findings of fact:

1. The applicant is the property owner.
2. The present zoning is R-1 (Residential 1 dwelling unit per acre), R-C (Residential-Conservation), I-6 (Heavy Industrial) and NR (Natural Resource Overlay District).
3. The lot area is 419.96 acres.
4. This special permit amendment complies with the Comprehensive Plan. The Comprehensive Plan acknowledges the existing land uses on the subject properties, and contemplates the quarry's reconfiguration as a water supply storage facility, which was recognized by the Board of Supervisors on 3 June 2014, via S13-IV-LP-1. The quarry use has always been recognized as appropriate under the Fairfax County Comprehensive Plan.
5. From 1972 through 2014, the applicant appeared before the Board of Supervisors and the Board of Zoning Appeals on multiple occasions, with each application approved.
6. The applicant operates under extraordinarily strict environmental and safety rules. Multiple Federal, State and County agencies constantly monitor and routinely inspect quarry operations. These agencies include the Federal Mine Safety and Health Administration, the Virginia Division of Mineral Mining, the Virginia Department of Environmental Quality, the Fairfax County Fire Marshal, the

Department of Planning and Zoning, plus other County agencies. The applicant's staff and outside consultants also conduct continuous internal reviews to ensure compliance. During a 60-year regulatory history with Fairfax County, the applicant's operations have been regulated at a more precise and stringent level than any other mining operation, not only in Fairfax County, but also in the Commonwealth of Virginia.

7. The Zoning Administration officials continuously inspect quarry operations for compliance with the Zoning Ordinance and the Board of Zoning Appeals approved development conditions. The applicant's operations have consistently been found to be safe, responsible, and in compliance with all applicable regulations. There have been no development condition or Zoning Ordinance violations in the preceding ten years, let alone the past five in the special permit amendment application we are addressing today. The Zoning Inspection Branch also requires the applicant to provide multiple offsite seismographic and air overpressure monitoring results quarterly.
8. The Board has reviewed the applicant's parent company's 10-K dated 31 December 2014, a yearly required submittal to the Securities and Exchange Commission. Based on this review, the Board believes the applicant uses the latest operational technologies as it constantly endeavors to improve operational efficiencies. For example, during 2014 the company spent \$225 million on capital improvements. The applicant operates in a capital-intensive, low margin, very competitive, fractured environment. The top five competitors control only 34 percent of the entire market. The applicant simply could not survive as a for profit corporation without constantly updating available technologies. Its primary competitors include Cemex S.A.B, de C.V, CRH plc, HeidelbergCement AG, Holcim Ltd., Lafarge, Martin Marietta Materials, Inc., and MDU Resources Group, Inc.
9. The Board reviewed all 424 controlled detonation data reports from 4 January 2008 through 1 December 2014 to ensure development condition compliance. There were no violations.
10. Two members of the Board inspected the applicant's quarry operations on 6 October 2014, along with a Fairfax County staff member. They witnessed all procedures associated with a controlled detonation, the actual detonation and noted no anomalies. They witnessed the detonation, but heard no noise and felt no vibrations.
11. The Board reviewed United States Bureau of Mines' analyses from 1980 to fact check an applicant letter dated 27 January 2015. As the letter noted, and as multiple United States Bureau of Mines' analyses confirmed, damage potential at a peak particle velocity of 0.4 inches per second is zero. In fact, United States Bureau of Mines' studies conducted over several decades indicate residential structures with gypsum wallboard are protected to a significantly greater peak

particle velocity than 0.40 inches per second, in fact, it is 0.75 inches per second minimum. In some cases, a peak particle velocity of up to 2.0 inches per second can be attained before even cosmetic damage may occur, but that is specific condition dependent. Based on this empirical, impartial research and analyses, a 0.40 inches per second peak particle velocity limit, including a one in ten controlled detonation with a 0.60 inches per second peak particle velocity limit, remains valid and comports with all the aforementioned United States Bureau of Mines' analyses. Each of the above values remains significantly below where even cosmetic damage might occur. The Fairfax County peak particle velocity maximum is 1.5 inches per second, and there are currently other firms in the same business within Fairfax County who detonate at a higher standard and are near residential areas.

Multiple states, counties, and cities, including the Commonwealth of Virginia, have adopted United States Bureau of Mines' recommendations as a safe guideline for vibration occurrences. It is generally accepted, if the detonation occurrences do not produce vibration levels exceeding limits set by the United States Bureau of Mines, the cosmetic damage potential, and hereby, structural damage from detonations is zero.

12. Extensive United States Bureau of Mines' research has shown normal environmental factors, for example, daily temperature changes, humidity and wind speed produce peak particle velocities of not only 1.2 inches per second, but also several times higher.
13. Laboratory research, plus field experience, confirms human beings cannot or have great difficulty in distinguishing vibration levels. For example, many individuals fail to realize humans tolerate similar and higher vibration levels than those in relevant limiting standards. These vibrations come from everyday sources in the home and during daily routines, for example, a clap of thunder, a door closing, a child running down a hallway, a windy day, a helicopter passing overhead, or an aircraft taking off or landing from Reagan National or Dulles Airports.
14. The applicant conducted 63 controlled detonations in 2014 totaling 63 to 93 seconds. If one assumes a worst-case scenario of 93 seconds, there remain 31,535,907 seconds during the calendar year for other natural or man-made noise and vibration events to occur. Two examples of these natural and man-made noise and vibration events are:
 - Natural - 2011 Virginia earthquake. An earthquake occurred at 1:51:04 p.m. Eastern Daylight Time on the 23rd of August 2011, with an epicenter 38 miles northwest of Richmond and 5 miles south southwest of the town of Mineral in Louisa County. This magnitude 5.8 earthquake was the strongest to have occurred east of the Rocky Mountains since 1897 and had a number of

aftershocks in the 4.5 range. Over \$300 million in damage was recorded with the quake being felt as far north as Quebec, Canada, as far south as Atlanta, Georgia and as far west as Chicago, Illinois. Locally, significant damage examples included the Washington Cathedral, the George Washington Monument and to the Lake Jackson Dam in Prince William County with repairs costing over \$900,000.

- Man Made - The Board tracked Quantico Marine Base firing range weekly data from Monday, 30 March 2015 through Friday, 29 May 2015. During just this one period, the range was used 34 days totaling 380 hours. Uses included live artillery fire exercises and demolition training. The Quantico website specifically states, based on atmospheric conditions, disturbances may be experienced. A specific example for just a one-week period is provided below:

DATE	ACTIVITY	HOURS
Monday, 4 May	Demolition Training	7:00 a.m. to 5:00 p.m. (10)
Tuesday, 5 May	Demolition Training	7:00 a.m. to 5:00 p.m. (10)
Wednesday, 6 May	Demolition & Live Artillery Fire	7:00 a.m. to 10:00 p.m. (15)
Thursday, 7 May	Demolition & Live Artillery Fire	6:30 a.m. to 2:00 a.m. (19.5)
Friday, 8 May	Demolition & Live Artillery Fire	6:30 a.m. to 2:00 a.m. (19.5)

Total: 79 hours in this one-week period.

The Quantico website notes: "Aircraft supporting training or support to other agencies from the Marine Corps Air Facility at Quantico can generate noise. The frequency and number of aircraft supporting training can occasionally generate higher noise volumes. Additionally, atmospheric conditions can amplify aircraft noise volume and the distance sound travels."

15. The applicant has equipped 9118 Mariah Jefferson Court, located 800 feet from current mining operations, with sophisticated displacement sensors to measure vibration effects and air overpressure on nearby structures, specifically evaluating casual connections with gaps and cracks. The findings confirm environmental effects including daily and seasonal temperature changes. Wind and precipitation have a far greater influence on the normal separations found in all structures.
16. A board member spoke with a real estate associate broker who, indicated she recommends homeowners not finish a basement for a one-year period after a home is built given natural settling will occur, causing cracks. The Board backed up her observation by reviewing the National Association of Home Builders Residential Construction Performance Guidance, Consumer Reference Third Addition, and noted the following:

INTERIOR CONCRETE SLAB, which is on Page 2, paragraph 2-2-1.

Observation: A concrete slab within a structure has separated or moved at control (expansion and contraction joints).

Performance Guideline: Concrete slabs within the structure are designed to move at control joints.

Corrective Measure: Because this is normal, no corrective action is required.

Discussion: Control joints are placed in concrete for the very purpose of encouraging cracking to take place at the joints instead of in random places.

17. With this Board's proposed development conditions, the applicant's operations continue to be the most regulated activity of its kind in the Commonwealth of Virginia, and perhaps in the United States.
18. The Board of Zoning Appeals does not have the authority to restrict truck traffic on a Virginia Department of Transportation (VDOT) controlled roadway (Lorton Road), nor frankly is this a zoning issue, but rather a transportation issue. It is specifically a VDOT responsibility, in coordination with the Fairfax County Department of Transportation, and the Fairfax County Police Department. However, the Board understands VDOT determined several months ago that Lorton Road fails to meet the criteria for truck traffic restrictions. Of note, Fairfax County landfill trucks use this same road, as well as other commercial vehicles. The Board reviewed Section 46-2-809 of the Code of Virginia, "Guidelines for Considering Requests to Restrict Through Trucks on Primary and Secondary Roads", and understands why Lorton Road failed to meet the VDOT criteria.
19. Commercial trucks operate under stringent federal, state and county operational and safety guidelines. The Board reviewed Federal Motor Carrier Safety Administration Regulations (Code of Federal Regulations 49 Parts 300-399); commercial trucks must comply with 41 separate parts of this Code of Federal Regulations to operate. Fines of \$1,000 per day to a maximum of \$10,000 can be levied if these rules are not obeyed, this in addition to Commonwealth and Fairfax County rules and regulations.
20. United States Bureau of Mines' analyses indicate a quarry, such as the applicant's, can exist next to residential communities.

21. The Comprehensive Plan explicitly recognizes disturbances to the Environmental Corridors serving the public interest may be appropriate in extraordinary circumstances. A stable public water supply reservoir, serving future generations of up to three million Fairfax County residents, is clearly such a circumstance, and will prevent what is occurring in the State of California at the present time. This is clearly in the public interest.
22. In a letter dated 14 April 2015, Mr. Charles M. Murray, General Manager, Fairfax County Water Authority, confirmed the consent of his organization to the inclusion of Fairfax Water's property identified as Fairfax County Tax Map Parcels 106-4 ((1)) 56A (pt) and 112-2 ((1)) 8 (pt) and 9 ("the Fairfax Water Property") in Special Permit Amendment Application SPA 82-V-091-06.
23. The applicant has received 37 national environmental, safety and community outreach awards during the past seven years. It also has been named one of the world's "Most Admired" companies 8 out of 10 years by Barron's magazine, explicitly for its "use of corporate assets and long term investment."
24. Based on the information before the Board of Zoning Appeals, the applicant is a superb corporate citizen and an extraordinarily valuable Fairfax County resource, not only in its business operations, but also by consistently giving back to the community it serves, as attested to by more than 100 letters of appreciation over the past five years. The applicant has provided significant financial, in-kind and material services to schools and other non-governmental entities as a part of an exemplary community outreach program. The applicant clearly acts in the public interest.
25. Unlike many special permits, the Board of Zoning Appeals will continue to review the applicant's operations every five years to assure its continued adherence to the imposed development conditions.
26. Based on the information in these Finding of Facts, the proposed development conditions appropriately support multiple, impartial, third-party, empirical scientific studies and analyses pertinent to this operation and represent an incredibly comprehensive regulatory oversight regime.
27. Staff recommends approval, and the Board agrees with their rationale, in addition to the findings of fact presented above.
28. The applicant has read, understands, and concurs with the proposed development conditions, including the amendments proposed at this hearing.

AND WHEREAS, the Board of Zoning Appeals has reached the following conclusions of law:

THAT the applicant has presented extensive testimony indicating compliance with the general standards for Special Permit Uses as set forth in Sect. 8-006 and the additional standards for this use as contained in the Zoning Ordinance.

NOW, THEREFORE, BE IT RESOLVED that the subject application is **APPROVED** with the following limitations:

1. This approval is granted to the applicant only, Vulcan Construction Materials, LP, and is not transferable without further action of this Board, and is for the location indicated on the application (approximately 419.96 acres), and is not transferable to other land.
2. This special permit is granted only for the purpose(s), structures and/or use(s) indicated on the special permit plat titled, "Vulcan/Graham Quarry, Special Permit Amendment Plat, SPA 82-V-091-06," prepared by Dewberry Consultants LLC, dated July 8, 2013 and revised through October 3, 2014, and approved with this application, as qualified by these development conditions.
3. A copy of this special permit and the Non-Residential Use Permit shall be posted in a conspicuous place on the property of the use and be made available to all departments of the County of Fairfax during the hours of operation of the permitted use.
4. This special permit is granted for a period of five (5) years from the approval date of SPA 82-V-091-06 with annual review by the Zoning Administrator or designee in accordance with Sect. 8-104 of the Zoning Ordinance. This special permit may also be renewed in accordance with the provisions of Sect. 8-104(4).
5. This special permit is subject to the provisions of Article 17, Site Plans, as may be determined by the Director, Department of Public Works and Environmental Services (DPWES). Any plan submitted pursuant to this special permit shall be in substantial conformance with these conditions. Minor modifications to the approved special permit may be permitted pursuant to Par. 4 of Sect. 8-004 of the Zoning Ordinance.
6. All areas of existing vegetation and the existing berms as shown on Sheet 16 of the special permit amendment plat shall be maintained.
7. The Environmental Quality Corridor (EQC) and Resource Protection Area (RPA) boundary as identified on the special permit amendment plat shall be delineated and appropriately labeled on all site plans.
8. The limits of clearing and grading shown along the RPA and EQC boundaries delineated on the special permit amendment plat shall be strictly observed and enforced. With each and every site plan submission for the Property, the Phase 1

and 2 Erosion and Sediment control plans and associated narrative shall VULCAN require the installation of tree protection fencing with signage and super silt fence along the limits of clearing and grading that abut the RPA and/or EQC boundaries. The only authorized encroachments into the RPA and EQC are those depicted on the special permit amendment plat and set forth in these conditions, subject to approval of a Water Quality Impact Assessment and those allowed by, or exempt from, the Chesapeake Bay Preservation Ordinance (CBPO), as approved by DPWES and/or the Board of Supervisors. Stream/Wetland restoration and enhancement as approved by the U.S. Army Corps of Engineers and/or the Virginia Department of Environmental Quality shall also be allowed. The applicant shall be responsible for the means and methods to ensure that construction does not encroach into the RPA and/or EQC beyond any authorized encroachments. Any unauthorized encroachment into, or disturbance of, the RPA is considered a violation of the CBPO and is subject to the penalties in Article 9 (violations and penalties) of such Ordinance.

9. Construction on the subject property shall comply with the limits of clearing and grading as shown on the special permit amendment plat, subject to allowances provided in these development conditions and for the installation of utilities, public improvements and/or trails as determined necessary by the Director of DPWES, as described herein. If it is determined necessary to install utilities, public improvements and/or trails in areas beyond the limits of clearing and grading as shown on the special permit amendment plat, such utilities, public improvements and/or trails shall be located in the least disruptive manner necessary as determined by the Urban Forest Management Division (UFMD). A replanting plan shall be developed and implemented, subject to approval by UFMD, for any areas on the subject property beyond the limits of clearing and grading that must be disturbed for such trails, utilities, or public improvements, if any such areas are identified at the time of site plan, as described herein.
10. The existing and proposed vegetation and landscaping and the existing and proposed berms shown on Sheets 15 and 16 of the special permit amendment plat, subject to approval by the UFMD, shall be deemed to satisfy the Transitional Screening requirements for the use and shall be maintained in a healthy condition. Species and exact location of any replacement trees that deviate from the plan as shown on Sheets 15 and 16 of the special permit plat shall be as determined by UFMD, DPWES. The chain link fence together with the existing and proposed berms surrounding the site shall be deemed to fulfill the barrier requirement.
11. The bond of \$2,000 per acre to insure restoration of the property shall be continued for the duration of this operation. The permittee shall comply with all requirements of the approved Restoration Plan and amendments thereto.

12. The area of stone excavation (that is to say, the actual quarry pit area) shall not exceed 232 acres as is shown on the approved special permit plat.
13. Stormwater management and erosion and sediment control measures as shown on Sheets 9, 10, and 11 of the special permit amendment plat, shall be implemented as approved by DPWES in accordance with the Public Facilities Manual (PFM) and Section 2-603 of the Zoning Ordinance.
14. The applicant shall coordinate with the Code Analysis Branch of the Environmental and Facilities Review Division of DPWES regarding best management practices (BMP) requirements of the CBPO. The applicant shall comply with those standards as determined by DPWES.
15. Drilling and crushing are limited to 7:00 a.m. to 6:00 p.m., Monday through Saturday. Detonations shall occur between 10:00 a.m. and 6:00 p.m., Monday through Friday. All detonations shall be adjusted for wind and other atmospheric conditions to minimize adverse effects on privately owned, occupied buildings. The Fairfax County Department of Planning and Zoning, Zoning Inspection Branch, and the Prince William County Public Safety Communications Center shall be contacted at least four hours prior to each detonation. Work on Sunday shall be limited to processing plant, equipment and operational repairs.
16. Blasting vibrations shall be limited to a maximum peak particle velocity of 0.4 inches per second in the earth at any privately-owned occupied structure not on the quarry or Fairfax County Water Authority (FCWA) property. However, one in ten shots may exceed 0.4 with the limit being no more than 0.6. Within these limits the operator shall continue to diligently oversee all loading and blasting so as to minimize to the extent possible any complaints of residents.
17. The peak overpressure from any blast shall be limited to 0.0092 psi (130 dBL) at any privately-owned, occupied structure not on quarry or FCWA property.
18. Earth vibration produced by the quarry from sources other than blasting shall not exceed 0.05 inches per second at any privately-owned, occupied structure not on quarry or FCWA property.
19. No blasting material shall be stored on site. When on site for a blast, all blasting materials shall be handled in accordance with standards and regulations established by the United States Bureau of Mines.
20. The crushing equipment may be generally located in its current or new location as shown on Sheets 5 and 6 of the special permit amendment plat provided it is operated pursuant to these conditions. An adequate dust suppression system shall be provided on the crusher to prevent point source emissions from the crusher, screens, shakers and the various conveyors during all periods of operation

including, but not limited to: testing; maintenance; and the actual crushing of extracted materials, stone and concrete and/or re-crushing of the same.

21. Dust control equipment shall continue to be operated on all portions of the Applicant's processing plant to adequately control dust. In the event new equipment becomes available to the industry, it shall be installed as soon as reasonably possible.
22. All conveyors shall continue to be covered, if necessary, to meet applicable standards.
23. Paved roads and other paved areas within the confines of the quarry shall be watered and cleaned with heavy duty cleaning equipment to prevent dust or mud from entering the public street.
24. Vulcan Construction Materials, LP shall take all steps appropriate or as required for deadening sounds of vibrating screens and plant operations during all periods of plant operation.
25. This approval includes the barge loading facilities and the operation thereof located on the north side of the Occoquan River adjacent to the site.
26. A copy of water quality data submitted to the Commonwealth of Virginia under the National Pollutant Discharge Elimination System shall be submitted upon request to the Department of Planning and Zoning (DPZ) on an annual basis.
27. The applicant shall provide DPZ with a record of any complaints or violations related to State and Federal permits for air quality compliance and water quality control.
28. The permittee shall absorb one hundred (100) percent of the cost of enforcement service as determined by the Zoning Administrator.
29. The applicant shall use Peniwill Drive only for emergency vehicle access.
30. SEA 82-V-046, APAC-Virginia, Inc., lessee of Tax Map 112-2 ((1)) 12, is not a part of this application and a change in this use or corresponding SEA would not necessarily require a change to this special permit. SEA 81-V-017-02, FCWA, owner of Tax Map 106-4 ((1)) 56A pt.; 112-2 ((1)) 8 pt., 9 pt. is not part of this application and a change in this use or corresponding SEA would not necessarily require a change to this special permit.
31. The applicant and its agents or contractors shall acquire any and all applicable fire prevention code permits, as determined by the Fire Marshal, for blasting- or explosive-related operations that occur within Fairfax County.

32. The applicant shall maintain accurate drilling, blasting, and seismographic records on-site and readily available for the Zoning Inspection Branch and the Fire Marshal's review for a period of five years.
33. The applicant shall notify the Zoning Inspection Branch and the Fire Marshal of any change in the location of seismograph monitoring and the reason(s) for the change.
34. The applicant shall forward all seismographic records to the Zoning Inspection Branch and the Fire Marshal for review on a quarterly basis. These reports shall also include the following information pertaining to blasts:
 - A. Date of blast
 - B. Time of blast
 - C. Pounds of explosives per delay
 - D. Total pounds of explosives per blast
 - E. Ground vibration levels
 - F. Peak air overpressure in decibels
35. The applicant shall forward all federal, state and local government detonation or explosive complaints to the Zoning Inspection Branch and the Fire Marshal within one (1) business day of receipt pertaining to Fairfax County operations unless damage is claimed. In this case the applicant will advise the Zoning Inspection Branch and Fire Marshal immediately. Citizen complaints to include noise, vibration and/or damage shall be reported to the Fire Marshal and the Zoning Inspection Branch through the formal Fairfax County complaint system. If contacted, the applicant will provide the contact information for each of these offices to the complainant. At a minimum, this will include the agency contact, the telephone number and e-mail address.
36. The applicant shall notify the Zoning Inspection Branch and the Fire Marshal immediately upon discovering a violation of any blasting- or explosive-related condition of this special use permit, including but not limited to ground vibrations or peak air overpressure above the levels set forth in the special use permit.
37. In addition to the seismograph monitoring required by Fairfax County at the closest occupied structure not owned by the Applicant or Fairfax County Water Authority, the applicant shall continue to employ seismograph monitoring at the current off site locations.
38. In addition to the auditory signal system currently utilized to indicate an upcoming blast, the applicant shall establish and employ reasonable procedures such as a telephone call or email to provide advance notification of each blast to interested parties requesting such notification.
39. Any new lighting installed on the site shall be shielded and directed downward.

40. Irrespective of the quarterly seismograph results submittals referenced in Condition 34, the applicant shall provide the results from seismograph monitoring, which include the date and time of each blast, within seven (7) days of receipt of such request by the Zoning Administrator or the Fire Marshal.
41. When a conflict exists between these conditions and other regulations by local, state or federal authorities regarding the quarry operations, the stricter condition(s) shall apply.
42. The Zoning Administrator, or designated agent, shall be permitted to inspect the premises monthly to determine that the quarry is being operated in compliance with all the foregoing restrictions.
43. The Temporary Pipe Diversion shall be located and installed in a 20 foot wide corridor in the least disruptive manner possible as determined by the applicant in consultation with UFMD. In order to protect areas adjacent to the pipe corridor, methods such as root pruning, installation of tree protection fencing and silt control devices shall be implemented where warranted and feasible. Removal of trash, plant debris, or extraction of trees designated to be removed within the pipe corridor shall be performed in a manner that minimizes damage to any tree, shrub, herbaceous, or vine plant species that grows in the lower canopy environment outside the 20 foot wide corridor; and minimizes impacts to the existing top soil and leaf litter layers that provide nourishment and protection to that vegetation, in coordination with UFMD. Any work within the 20 foot wide corridor that requires the use of larger motorized equipment shall be utilized in a manner that reduces the impact on adjacent vegetation to remain in the EQC along the boundaries of the 20-foot-wide corridor.

In the event that disturbance to vegetation outside the 20 foot wide corridor was to occur within protected EQC not approved for disturbance, the applicant shall develop and implement a replanting plan for the portions of protected areas disturbed adjacent to and outside the 20 foot wide corridor taking into account any planting restrictions. The replacement of any impacted existing trees outside of the 20 foot corridor shall be compared to the loss of canopy square footage. Trees that are a part of the reforestation areas as described in Condition 45 below shall not be considered as replacement trees for those trees that would require replacement due to disturbance within the EQC to trees outside the approved 20 foot wide corridor. The replacement for each tree that is impacted for areas outside of the 20 foot wide corridor will be reviewed by UFMD, and a replacement quantity will be provided. Replacement trees will be a minimum of 2 inch caliber and of an equivalent species to that which was lost. Replacement trees will be planted during the next available planting season as determined by UFMD.

44. The applicant shall obtain approval of an RPA Encroachment Exception and a Water Quality Impact Assessment (WQIA) from DPWES and/or the Board of Supervisors before any future encroachment and/or elimination of RPA may occur.
45. Prior to approval of the first site plan for which disturbance of the Little Occoquan Run EQC would be authorized, the applicant shall obtain approval of an EQC Compensation Plan from DPZ in coordination with the Stormwater Planning and UFMD divisions of DPWES and the Fairfax County Water Authority (FCPA). In order for the EQC Compensation Plan to adequately compensate for the EQC impacts of the quarry reconfiguration, it shall be in substantial conformance with the minimum actions identified herein. In addition, the EQC Compensation Plan shall include an analysis demonstrating that there will be a net habitat benefit of the proposed reforestation efforts (compared to the habitat value of the EQC areas to be disturbed) no later than 20 years after initiation of disturbance of the EQC. This analysis shall apply the U.S. Fish and Wildlife Service's Habitat Evaluation Procedures, Ecological Service Manuals 101, 102, and 103, and shall present habitat value results in terms of Habitat Units. If the reforestation efforts identified herein will not be sufficient to achieve this result, the applicant shall augment the reforestation efforts, subject to the review and approval of DPZ in coordination with the aforementioned agencies, in a manner that will be sufficient to attain a net habitat benefit within the 20-year period. Measures within the EQC Compensation Plan shall be incorporated within the site plan as applicable. Unless alternative EQC compensation measures are proposed that would satisfy this requirement, as determined by DPZ in coordination with the aforementioned agencies, the EQC Compensation Plan shall include the following:
 - A. Reforestation of 4.83 acres with 400 seedling stems per acre adjacent to the upper Little Occoquan Run EQC;
 - B. Reforestation of 0.57 acres with 400 seedling stems per acre adjacent to lower Little Occoquan Run;
 - C. Reforestation of 1.31 acres with 400 seedling stems per acre adjacent to Elk Horn Run;
 - D. The provision of additional shrubs, understory and/or overstory trees as may be required by UFMD as part of the reforestation plans, shall be planted in order to ensure that the reforestation areas would be planted at densities no less than the minimum planting density requirements for reforestation areas as set forth in Section 6-1311 of the Public Facilities Manual not to exceed 400 seedling stems per acre.
 - E. The provision of plans for semi-annual review and maintenance, to be submitted and approved with the site plan by UFMD, for all areas that will be reforested, that will be sufficient to ensure a survival rate of at least fifty (50) percent of the planted materials after a five year period—these plans shall detail efforts that will be pursued to protect plantings from deer and to control invasive plants within the reforestation areas. The applicant shall provide semi-annual monitoring of the reforestation areas by a certified arborist or

certified horticulturist to ensure compliance with the survival rate and replant as necessary to ensure compliance with the EQC Compensation Plan.

- F. Prior to disturbance of the EQC, payment shall be made to FCPA, in order to permit the FCPA to reforest a minimum of 4.74 acres on property controlled by Fairfax County. The payment amount shall be made prior to site plan approval and shall be determined by FCPA in coordination with UFMD and DPZ but shall not exceed the cost for reforestation efforts established in the most recent DPWES Comprehensive Unit Price Schedule.

As an alternative to this payment, the applicant may pursue reforestation of a minimum of 4.74 acres of open land within the watershed through one or a combination of the following options, subject to the documentation of the selected option(s) in the EQC Compensation Plan and determination by DPZ (pursuant to DPZ's approval of the EQC Compensation Plan in coordination with other agencies) that the option(s) selected, in combination with other EQC compensation efforts, would be sufficient to compensate for the EQC impacts of the quarry reconfiguration;

- i. Reforestation, with 400 seedling stems per acre, by the applicant onsite above and beyond the reforestation identified above in A-D, subject to review and approval by DPZ, UFMD, and DPWES and subject to the provision of a maintenance plan per paragraph E above;
 - ii. Reforestation, with 400 seedling stems per acre, by the applicant on property within the watershed to be reviewed and approved by DPZ, UFMD, and DPWES and subject to the provision of a maintenance plan per paragraph E above;
 - iii. Preservation, in lieu of reforestation, of existing land within the watershed through means which may include, but not limited to, a conservation easement to the benefit of Fairfax County, or dedication to an agreed upon public entity. The location of the easement/ dedication and ratio applied to the easement/dedication area compared to the value of reforestation either on site or off site shall be subject to the review and approval of DPZ. Any easement or instrument used to implement this requirement shall be in a form approved by the County Attorney.
- G. As part of the diversion of Little Occoquan Run, installation of approximately 880 linear feet (0.4 acres of bottom) of grass lined swale with check dams;
- H. Provide for design details for the floating treatment wetlands and grass lined swale with check dams demonstrating that these measures will attain the pollutant removal performance levels ascribed to them in the plan;
- I. Installation of floating treatment wetlands, with a cumulative volume of no less than 1,125 cubic feet, in the pond above upper Little Occoquan Run.

- J. Maintenance plans for the grass lined swale/check dams and floating treatment wetlands shall be submitted as part of the site plan review, demonstrating the long-term viability of these measures. The maintenance plan shall be in place until the water from the diversion is allowed to discharge into the quarry pit/reservoir.

Prior to disturbance of the EQC the applicant shall implement the EQC compensation measures as detailed in the approved EQC Compensation Plan with the exception of the vegetative swales and floating wetlands.

46. For areas of the subject property not yet surveyed for archaeological resources, the applicant shall conduct a Phase I archaeological survey for areas of ground disturbance and provide the results of such studies to the Resource Management Division of the Fairfax County Park Authority. If deemed necessary by the Resource Management Division, the applicant shall conduct a Phase II and/or Phase III archaeological study on only those areas of the Application Property identified for further study by the Resource Management Division. The studies shall be conducted by a qualified archaeological professional approved by Resource Management Division, and shall be reviewed and approved by the Resource Management Division.
47. The applicant shall grant and convey to Fairfax County a public trail easement, on property owned by the applicant, to facilitate the northern trail alignment depicted on the special exception amendment plat for SEA 81-V-017-02. The dedication of the trail easement shall be consistent with location, width and timing described in the development conditions for SEA 81-V-017-02. The applicant shall have no responsibility for the construction of the trail.
48. At the time of site plan review, the applicant shall demonstrate to the satisfaction of DPWES that the proposed diversion of Little Occoquan Run will not create or aggravate back water ponding and/or flooding that would adversely affect any property adjacent to the subject property.
49. Subject to the approval of FCWA, an additional landscaped berm shall be constructed along FCWA's Ox Road frontage immediately north of the southern vehicular access point to the Griffith Water Treatment facility as generally shown on Attachment A. The locations of fencing, utilities, and a possible future 8-foot wide paved trail, all of which are shown on the special exception amendment plat for FCWA, may be modified to accommodate the construction of the landscaped berm. The berm may be revised or removed if deemed necessary by FCWA to facilitate the location of utilities and/or water lines.

These conditions incorporate and supersede all previous conditions. This approval, contingent on the above-noted conditions, shall not relieve the applicant from compliance with the provisions of any applicable ordinances, regulations, or adopted standards.

Pursuant to Sect. 8-015 of the Zoning Ordinance, this application shall become valid upon the date of approval by the BZA.

Mr. Hart seconded the motion, which carried by a vote of 5-0. Mr. Hammack and Mr. Smith were absent from the meeting.

A Copy Teste:

A handwritten signature in cursive script that reads "Mary D. Padrutt". The signature is written in black ink and is positioned above a horizontal line.

Mary D. Padrutt, Deputy Clerk
Board of Zoning Appeals