Response to Public Comments on proposed Remedial Action Plan
For the BB&T Site (DSCA Site #32-0013)
1103 W. Club Blvd, Durham, NC

The DSCA program held a 45-day public comment period from January 29, 2012 to March 14, 2012, to allow interested parties to provide comment on the proposed Remedial Action Plan (RAP) for the BB&T Site (DSCA site # 32-0013) in Durham, NC. The objectives of the RAP are to significantly reduce the contaminant mass in the soil and groundwater through excavation and proper disposal of impacted soils, and through placement of a remediation agent to promote breakdown of contaminants in groundwater. The goal of this effort is to reduce the source of contamination to eliminate unacceptable risks from vapor intrusion and thereby eliminate the need for indoor air mitigation measures. The RAP can be found on DSCA's website at www.ncdsca.org under BB&T Site Updates.

Public comments related to the RAP are shown below (in **bold**). Similar comments are grouped together, with a DENER response following each group of similarly-themed comments. The original wording of each comment is included, and where necessary, clarification has been added in square parentheses [ ].

Comment(s) Received:

1. **Excavation. The RAP should be finalized so that removal of contamination is maximized, with less focus on the placement of Adventus or similar product at the Site. The efforts to dig more vertically at two locations on the southern perimeter of the Site are noted with approval, and efforts to increase excavation and other measures to remove contaminated material are also appropriate and should be reflected in the RAP.**

2. **Given that excavation seems to be the safest and most cost-effective remediation technique, I would encourage you to spend as much of the cleanup effort and funds as possible on excavation. My preference would be for you to excavate all the contamination possible and avoid use of the Adventus products.**

3. **Given that excavation seems to be the safest and most effective remediation technique, I request that the site be excavated to remove all the contamination and that contaminated water be extracted.**

4. **To the extent that the excavation is less than proposed because soil and sidewall stability is compromised by the presence of groundwater with depth, appropriate revised remedial actions should be taken to effectively deal with contaminated soils that could not be removed in order to ensure that the overall remedial success is not compromised by a reduced scope of excavation from what was originally intended and proposed. I strongly urge DSCA to remove as much contaminated soil as possible.**

5. **As a resident, I am concerned about the application of compounds which generate not only volatile and toxic substances, but also pressure which could force the contamination to spread further. I prefer that you excavate the contamination and avoid the Adventus products altogether.**

6. **We would like to see the NCDENR use the current groundwater data, evaluate the impact on the project (e.g., evaluation of off-site plume migration, etc.) and confirm both that the current approach**

is appropriate (including the decision not to excavate in the 'former dumpster area') and develop a monitoring/action plan to address potential off-site migration issues.

7. **I request that both sites of origination (near the former building and near the former dumpster) be excavated for maximum removal of the contamination.**

8. **I request that *both* sites of origination (near the former building and near the former dumpster) be excavated for maximum removal of the contamination.**

DENR Response: Comments are acknowledged. The RAP proposes an excavation area that maximizes source soil contaminant removal without compromising the safety of workers or off-site structures, and considers the cost constraints of the program. The size limitations of the property affect the lateral extent and depth that can safely be excavated. Alone, excavating below the water table is not a cost effective way to reduce contamination and therefore, an amendment (such as Daramend or EHC) is added to promote the breakdown of the contaminants in groundwater. The proposed injection of EHC after the excavation will strategically place the amendment in the area of highest groundwater contamination, and further promote the reduction of the contaminant mass. The option of extracting impacted soil gas and groundwater was evaluated as a technology as described in Section 5.1 of the RAP, and was determined to have very limited effectiveness due to the low yield observed through testing of the geologic materials at the site. In reference to the concern about the "former dumpster area", the soil data does not justify excavation in that specific location. The high groundwater concentrations near the "former dumpster area" will be addressed as proposed in section 6.2 of the RAP. Given the conditions of the site and the surrounding properties, the current proposal represents the best balance of safety, contaminant removal, and cost in the DSCA Program's efforts to reduce contaminant vapors from the highly impacted soil and groundwater. Post-RAP monitoring, as described in Section 7.0, will be conducted to evaluate the migration of groundwater and soil gas contamination as well as subsurface pressures. Appropriate actions will be taken based on an evaluation of this data.

Comment(s) Received:

9. **If the chemical treatment does not prove to be effective, do we expect that the site will be excavated again and other measures taken? I doubt it.**

DENR Response: The site is not expected to be excavated again; however, the DSCA program will monitor soil gas and groundwater data in accordance with the RAP to determine if additional remedial action is warranted in the future.

Comment(s) Received:

10. **Flexibility. As the site is excavated, we request that sufficient flexibility is allowed in the RAP for locally based DENR project management to excavate additionally, remove additional materials through other methods, or take the opportunity for increased characterization at depth.**

DENR Response: Comments are acknowledged. There is a measure of flexibility with any plan, however, due to the size limitations of the property, the option of excavating additional contaminated soil will be considered if it can be done safely and cost effectively.

Comment(s) Received:

11. **If removal of soil during excavation results in the ground shifting, and this movement leads to structural cracks in nearby homes, who is responsible for repairing this damage?**

DENR Response: This project has been designed to minimize risk for soil movement. The homes are at a sufficient distance from the excavation that they are not at risk for damage to foundations as a result of this project. The integrity of the foundation of the building (church) at 1414 Watts Avenue is close enough to the excavation to be a concern. As such, helical piers have been specified for protection of this building's foundation.

Comment(s) Received:

12. **Increased characterization. The RAP calls for some increased temporary measurements of gasses, perc and perc by products in the vents and it calls for continued monitoring of existing monitoring points (at least for a period) after excavation, the RAP should also call for increased characterization of the Site at depth. Perc is heavy, there are rocky areas in the Site, there are cracks in those rocks and transition areas between soil/rock formations. To the extent that the excavation allows an opportunity to better understand and characterize the Site at depth, the opportunity should be utilized.**

13. **We would like information regarding additional site characterization activities to be conducted. In addition, recent groundwater monitoring conducted at the 1419 Dollar Avenue residence (see item 12 below) indicates an increase in groundwater concentrations of PCE and thus, potential off-site migration of impacted groundwater. We request an evaluation of off-site migration and a plan to confirm/address this situation including remedial actions as appropriate (including an evaluation of source removal at the 'former dumpster area').**

DENR Response: Comments are noted. Additional site characterization will be a component of future work at the site. The RAP is designed to address the removal of source contamination. As shown in Attachment 3 of the RAP, PCE soil concentrations in the former dumpster area do not exceed the PCE cleanup goal of 2 mg/kg in soil. However, during the remedial activities, site conditions will be logged with photographs, notes, and readings from monitoring instruments. Any additional information gathered regarding the subsurface formation will be integrated into the conceptual site model and used in future decisions made at the site. Assessment activities completed at the site indicate competent rock is located approximately 50 to 75 feet below land surface. It is unlikely that the rock formation will be encountered during the excavation. In addition to evaluating the effects of the remedial efforts, the groundwater monitoring plan (Section 7.2 of the RAP) will also aid in assessing plume migration. Decisions regarding additional assessment and/or remediation will be based on the data gathered from the groundwater, soil gas, and indoor/outdoor air monitoring.

Comment(s) Received:

14. **Excavation Procedures - The area of proposed excavation of impacted soils will be large (up to 25 ft below surface). Steps need to be taken to ensure appropriate protections to the publics' health given such a large area of digging, including control of exposed and/or stockpiled soils to prevent any runoff and actions to minimize the release of dust and particulate matter during the excavation process.**

15. **While the procedures for monitoring off gassing and other emissions during excavation make sense, the proposed plan of telling neighbors to avoid spending time outdoors in the event elevated levels of dust/gasses/emissions implies that proactive limiting measures should be undertaken as a matter of**

course. Otherwise, we will be seeking to limit exposures after elevated levels are detected. Please amend the RAP to add ounces of prevention (along the lines of closing the site at night and watering).

16. **I request that the excavation hole be covered every night and on weekends and holidays during the remediation period.**

17. **I request that a proactive approach be adopted during the remediation of the site. I further request that: - At the end of each day, and over the weekends and holidays, the site be covered to reduce out-gassing and odors - Foam, fans, and other safety equipment be kept on site for immediate use should the site fail to meet residential safety levels - Personnel trained in the proposed emergency procedures be on site during operation and that they be provided clear guidelines and procedures detailing how they are to deal with any crisis.**

18. **Steps should also be taken to minimize and/or mitigate any odors resulting from the excavation and excavated soils, including some means for covering the site during the overnight periods.**

19. **The DSCA Program should take effective odor control measures as required.**

DENR Response: PCE has a sweet odor similar to the common household degreaser "WD-40" or ether. Section 6.4.4 of the RAP describes the outdoor vapor monitoring plan which outlines safe and appropriate outdoor air levels of PCE. Paragraph (4) of this section discusses the physical barriers (tarps, plastic sheeting, and vapor control foam) that will be used for vapor control. Vapor control will be implemented as outlined in this section. The highest potential for vapors in the ambient air will likely be during the active loading of the excavated soil into trucks. The density of PCE is greater than air; therefore, PCE vapors in the excavation are expected to settle to the bottom of the excavation and remain below ground. Thus, vapor control measures such as covering the excavation overnight would only be used as needed based on outdoor vapor monitoring.

Comment(s) Received:

20. **During one of the meetings in the neighborhood, I heard a discussion about the possibility of installing a horizontal network of perforated piping at the bottom of the excavation, with access to that system at the surface. This would facilitate additional treatment if either: (1) the amount of treatment is found to be inadequate, or (2) a different compound might be used as a follow-up. This sounds very logical.**

DENR Response: This comment is noted. An evaluation of remedial technologies is documented in Section 5.0 of the RAP. An infiltration gallery (described in the comment) is a method sometimes used to distribute remediating agents to the subsurface, but it is not very efficient. Based on the evaluation of the technologies and the nature of the geologic materials, it is our professional opinion that the most effective means of getting the remediating agent in contact with highly impacted groundwater is to place it directly into targeted discreet intervals in the aquifer via direct push injection. The performance of EHC will be evaluated through monitoring data, and should additional remediating agents be required, those amendments will be considered at such time as is appropriate.

Comment(s) Received:

21. **The results [*from air monitoring*] should be posted in weekly status updates during remediation. After remediation, the results could be included in a monthly summary available online along with**

other key monitoring data until the site had reached a stable/acceptable condition. If any immediate health issues arise, I request that you inform all interested residents (not just owners of contiguous property) on a timely basis.

22. **During remediation, I would like to see status updates posted online tracking progress and advising of any issues or concerns, including results from monitoring. I request that these status updates be posted on a weekly basis.**

23. **Notice of Hazardous Conditions during RAP - In the event that hazardous conditions arise during the work (high levels of vapors/fumes, dust, etc), I am concerned about what steps will be taken to notify area residents, the church, and businesses of such conditions. I believe that there should be some type of plan for dealing with such a contingency, perhaps involving something as simple as color coded signage (such as similar to ozone or air quality action warnings -- green, yellow, orange, red) at the work site, distributed to nearby residents and businesses and on the DSCA website to inform the public of current and changed conditions. Please inform me and the public by use of email and the DENR website of DSCA's contingency planning and any adverse conditions or circumstances. I believe such notification of any hazard concerns should occur within twenty-four (24) hours.**

24. **All interested residents (not just owners of contiguous property) be informed immediately of any health concerns.**

25. **What is the radius to be used for notification and will this information be posted on the website, with alerts provided if feasible?**

26. **With regard to this monitoring, and associated issues of worker and public health and safety, I would submit that more monitoring is better than less, and I would request that the determination of monitoring frequency in this regard be made accordingly. Further, DSCA needs to specify how any vapor readings above the relevant standard (>10 ppm) will be handled, particularly in relation to public notice.**

DENR Response: Comments and concerns are noted. Section 6.4.2 of the RAP will be amended to note that DSCA will post biweekly updates on the status of the remediation on its website at www.ncdsca.org, and e-mail the update to those on the distribution list. The biweekly status updates will include descriptions of conditions encountered during the bi-weekly reporting period. These updates will begin two weeks after excavation activities commence (approximately June 11, 2012).

During the excavation, monitoring of vapors will be carried out according to Section 6.4.4 of the RAP. Outdoor air monitoring during the excavation proposes vapor monitoring along the perimeter of the property every 15 minutes during working hours. Vapor control measures and notification of the public within the affected area will be made should PCE vapors exceed 10 ppm over background for more than a half-hour (two consecutive 15-minute readings). Upon any discovery of such an issue, the DSCA contractor will notify DSCA staff and then go door-to-door in the downwind direction and attempt to contact each resident or business in person. If no person is available at an affected property, then a written notice will be placed on their door. A DSCA contractor staff member will continue to perform active monitoring until the volatile organic compound concentrations subside. Once volatile organic compound concentrations subside, attempts will be made to notify those that were affected in person and/or a second written notice will be placed on the door of the residence and business. If it is determined to be necessary, active outdoor air monitoring may be performed on neighboring properties to verify that ambient levels are acceptable. The biweekly status updates will document instances

where outdoor air exceeded the 10 ppm threshold, and the actions taken to reduce levels and notify affected properties.

Comment(s) Received:

27. **Vapor Monitoring Plan - The RAP specifies that vapor readings at the property boundary will be monitored each workday during active excavation at a "frequency necessary" to determine that vapor concentrations are consistently below the relevant standard(s). I believe DSCA should provide information on how that monitoring will be conducted, including what equipment and methods will be used for that purpose.**

DENR Response: The "Vapor Monitoring Plan" Section 6.4.4 specifies that volatile organic compound (VOC) concentrations will be recorded every 15 minutes. Section 6.4.4 of the RAP will be amended to include the following: "Withers and Ravenel (the contractor) will use the TVA 1000 Organic Vapor Analyzer PID/FID or equivalent for monitoring VOCs in outdoor air. Accuracy of the FID is ±25% of reading or ±2.5 ppm, whichever is greater, from 1.0 to 10,000 ppm. A second instrument to be used for the outdoor vapor monitoring is the direct-reading Dräger Chip Measurement System (CMS) with detection capabilities of 5 to 150 ppm for PCE, 5 to 100 ppm for TCE and 0.3 to 10 ppm for Vinyl Chloride."

Comment(s) Received:

28. **In the RAP various statements are made about Adventus products. At times, it is unclear whether the RAP is repeating manufacturer representations of the product or third party study conclusions. The judgment as to the soundness of any product, its efficacy and safeness that we are interested in are DENR's. Please review the RAP and amend it to confirm efficacy and safety of the product, based on your studies, experience and judgment regarding the products, especially with regard to similar urban residential circumstances. We expect DENR to stand behind the decision to use these products and not to rely on manufacturer specifications or studies or the recommendations of consultants.**

29. **As a nearby resident, I am most concerned about the application of compounds which generate not only volatile and toxic substances, but also pressure which could force the contamination to spread further. There was not any experience data available in the RAP or at the March 5th meeting on the impacts and effects of Adventus product use at comparable sites in urban residential settings. Nor was there any evidence about both the hazards and success, short and longer term. The risk versus benefit information presented was not convincing.**

30. **In the RAP and in the public meeting, various statements were made about the safety of the Adventus compounds and their by-products, but it was not clear to me that the assessment of these products was done by DENR rather than by Adventus or some consultant. I expect DENR to perform the assessments and studies and to stand behind any decision to use these products. The RAP should present the analysis used to assess the safety and efficacy, not just financial expediency of these compounds.**

31. **Response requested from NCDENR regarding knowledge of implementing the proposed plan in similar geological conditions and the probability of success using reasonable assumptions.**

DENR Response: Comments and concerns are noted. EHC has been successfully used to treat groundwater contaminated with chlorinated solvents at a number of sites across the state. The use of any remediation agent

injected into the subsurface requires a permit by the Underground Injection Control (UIC) Program in the Division of Water Quality (also in DENR). In addition to our evaluation of the use of EHC, the UIC Program will thoroughly evaluate the UIC permit application. Their review of the application involves identifying data gaps, determining the suitability of the injectant for the contamination present, and specifying a monitoring program to help ensure the protection of human health and the environment. The UIC Program has approved EHC injections across the state in various formations, including ones of low hydraulic conductivity similar to the BB&T site. It is in everyone's interest to safely and successfully reduce the contaminant concentrations in soil and groundwater, and the DSCA Program is confident that this is a low-risk remediating agent that provides very good results and represents the best option for the circumstances at this site. The post-injection monitoring will be the best measure of how much reduction has been achieved by the combined efforts of soil excavation, Daramend placement, and EHC injection.

Comment(s) Received:

32. **The DSCA Program should take appropriate measures to insure residual source material does not continue to impact groundwater and lead to further off-site migration. These measures should include, but not be limited to, evaluating the presence of existing bacteria necessary for successful remedial program implementation and/or inoculation of the bacteria as recommended by Adventus; evaluation of additional source removal at the site; etc.**

DENR Response: Comment is noted. The removal of source material proposed in the RAP will guarantee that it will no longer contribute to the contamination of groundwater. The amendments added to the excavation and injected into the groundwater as proposed in the RAP will also significantly eliminate the further contamination of groundwater. The post-remediation monitoring will allow us to evaluate its effectiveness and determine if further action is warranted. Based on the experience of our staff and contractors, the bacteria necessary for the degradation of PCE are generally present throughout the piedmont and coastal plain areas of North Carolina. The goal is to create an optimal environment for the bacteria to do what they do best. The Daramend and EHC agents provide a fermentable, plant-based material that produces acetate and hydrogen, which is utilized by the indigenous bacteria to degrade PCE. Sampling of specific PCE degrading bacteria will be added to the post-injection groundwater monitoring, which will aid in evaluating the effectiveness of the injection, and if necessary, how to improve its effectiveness.

Comment(s) Received:

33. **Presence of Adventus Personnel - It is recommended at page 15 of the Adventus conceptual remedial design and cost estimate dated September 27, 2011, which is attached to the RAP, that Adventus personnel be on site during project start-up to support the Withers & Ravenel field staff.**

DENR Response: Adventus personnel have been involved with the development of the RAP. Withers and Ravenel will utilize Adventus personnel during the project on an as needed basis. Withers and Ravenel has experience with oversight of injection of Adventus products at several sites in North Carolina.

Comment(s) Received:

34. **Continued use of the existing bus stops, without even temporary relocation, implies either that DENR may have exaggerated safety concerns regarding Perc unnecessarily concerning neighbors or that local officials may be taking a cavalier attitude toward public safety. The contradictory attitudes**

towards the bus stops is confusing. Please amend the RAP to put on the record all reasons DENR has given local officials for DENR's belief that the bus stops be temporarily relocated. Please also amend the RAP to put on the record all reasons local officials have given for not temporarily relocating the bus stops.

DENR Response: Contrary to statements made previously, we are not advocating the closure of the bus stop. Our strategy for protecting surrounding areas (including neighbors and bus stop users) is to control vapors on the site and take preventive measures should elevated readings be found at the property boundary. During the excavation, vapors will be monitored according to Section 6.4.4 of the RAP. Sustained PCE concentrations in outdoor air are not expected to exceed the threshold developed by DSCA at the current location of the bus stop. Therefore, relocation of the bus stop was not considered necessary during this project. Due to the heavy use of the bus stop and limited alternate bus stop locations along W. Club Blvd, DATA has requested the bus stop remain open unless outdoor air monitoring warrants temporary closure of the bus stop. The occupants of the bus stop will be treated with the same standard as the local residents and business owners. The DSCA contractor has been in communication with DATA officials about this issue throughout the RAP development process. Section 6.4.4 of the RAP will be amended to include the following statement:

Withers and Ravenel will also immediately notify DATA so that a DATA dispatcher can notify both the incoming and outgoing buses to use alternative bus stops. Riders waiting at the bus stops on either side of W. Club Blvd will be directed to the alternative bus stops by Withers and Ravenel personnel. Normal service of the outgoing and incoming buses will resume once PCE vapors dissipate to less than 10 ppm along the perimeter of the property.

Comment(s) Received:

35. **With the possibility of increased volatility and increased byproducts caused by introduction of the Adventus products, we reiterate the request made at the public hearing to amend the RAP to call for increased water sampling, especially in Ellerbe Creek.**

DENR Response: Monitoring of Ellerbe Creek will be performed in the future as part of additional assessment activities to be conducted on the Northgate Mall property. However, because the historical sampling results for Ellerbe Creek have been clean, the slow groundwater flow rate, and the distance to the creek, it is not part of the proposed monitoring associated with this remedial action.

Comment(s) Received:

36. **Please keep an updated schedule of the remediation process posted online so that residents can plan accordingly.**

37. **I request that an updated schedule of the remediation process be posted online and that notifications be sent to the residents, the President of the Trinity Park Neighborhoods, and anyone who has asked to be on your notification list.**

38. **Public Notice on the Status of Remedial Work and Progress - As a property owner and community resident, I believe that the general public should be kept informed of the status of the remedial work and progress as the RAP moves forward and is accomplished. At a minimum, updates of the work should be emailed twice a month to the list of interested individuals and organizations, including the**

Trinity Park Neighborhood Association, and posted at least twice a month to the BB&T Site on the DSCA website, and these updates should include results from any sampling and monitoring (vapors, air, groundwater) that occurs at the site.

39. **We note with approval that there will continuous monitoring of contamination levels, gasses, etc. The RAP should allow adjacent residents to have access to reports in as near time as possible.**

40. **Results from indoor air monitoring at the three adjacent structures (1414 Watts, 1421 Dollar and 1419 Dollar), as well as any other such monitoring results, should also be provided to the owners of those properties as soon as received by DSCA. Additionally, based on the progress of the RAP work and results from on-going sampling and monitoring during the process, I believe that there should be opportunities for public input in order to raise questions or discuss any changes to the plan based on conditions encountered during the project.**

41. **We would like a complete monitoring schedule including, but not limited to, indoor air and groundwater. The monitoring schedule should include monitoring as soon as backfill is completed and monthly thereafter to assess the aforementioned suggested plume migration. This information should be included on the DSCA Program website and other communication methods used for the site.**

DENR Response: Comments and concerns are noted. Section 6.4.2 of the RAP will be amended to note that DSCA will post an updated schedule along with biweekly status updates on its website at www.ncdsca.org, and e-mail the schedule and status updates to those on the distribution list. The biweekly status updates will include an updated schedule and descriptions of conditions encountered during the bi-weekly reporting period, which will begin two weeks after commencing excavation activities (approximately June 11th). Indoor Air Monitoring data will continue to be provided to the respective property owners noted above in a letter format with an evaluation of the results. The public should contact the DSCA project manager regarding any input, questions, or comments throughout the project. .

Comment(s) Received:

42. **We request that all notices that are sent to adjacent residents are also sent to the Trinity Neighborhood Association President.**

43. **I request that I be on your list of people who will receive any announcements, updates, schedules, or status reports.**

44. **Please keep me on your list of people who want to receive any announcements, updates, schedules, or status reports.**

DENR Response: In addition to interested parties already receiving regular e-mail updates and announcements, those who provided contact information at the March 5th public meeting, will also be added to the e-mail distribution list. The TPNA President will be sent a copy of any notices related to the proposed remedial action that are sent to adjacent residences.

Comment(s) Received:

45. **Funding. The RAP's schedule touching on two fiscal years in order to increase available funding is noted with approval, but again raises concerns that financial issues may drive treatment of the Site in the future.**

DENR Response: The concern is noted. Responsible management of the available funding is a significant component of administering the DSCA Program. Our objective at every site is to reduce all risks posed by the contamination to an acceptable level, and our resources will continue to be focused on that goal. DSCA firmly believes that this RAP will be the most effective and efficient means of achieving that goal for the BB&T site. While the statutory limit on the amount that can be spent in a fiscal year is necessary, it also challenges us to find cost effective solutions so that we can remediate as many sites as possible.

Comment(s) Received:

46. **The public meeting was useful in better understanding the RAP and addressing some concerns. It raises the possibility that public discussion and public input before a RAP is presented even in draft form would be advantageous, improve communication and give a greater sense of public participation in a DSCA program that seems to have large levels of participation by the dry-cleaning community.**

DENR Response: The comment is noted and appreciated. DSCA's public participation process is defined in G.S. 143-215.104 L, Public Notice and Community Involvement. It allows for a public meeting and for submittal of public comments, and these regulations are considered standard for most environmental programs. The RAP provided for public comment is a draft plan that the program believes will best meet the remediation goals for the site. TPNA and its members have provided valuable feedback on this RAP for the BB&T site, and our goal is to improve the RAP, as well as our communication with everyone interested in the site.

Comment(s) Received:

47. **The RAP should clarify what percentage of contaminated material the proposed plan will remove and what percentage will remain on the site.**

48. **I request that the RAP clarify what percentage of contaminated material the proposed plan will remove and what percentage will remain on site**

DENR Response: The excavation limits are based on a PCE cleanup goal of 2 mg/kg in soil. The proposed excavation will remove approximately 86% of the PCE impacted soils in the source area. Access to the remaining soil is limited by the location of the adjacent building.

Comment(s) Received:

49. **I request that all the correction factors used in the RAP be those used for residential areas and not those used for industrial or commercial areas.**

DENR Response: In accordance with the 15A NCAC 2S Rules governing risk assessment for DSCA, property use must be considered. Therefore the applicable screening levels for soil gas and indoor air will be used for the current use of the property - residential or non-residential land use.

Comment(s) Received:

50. **Acceptable risk for the residences needs to be designated at what is generally considered the more protective end of the acceptable CERCLA range at 1 x 10^{-6} for residential structures. The risk of 1 x 10^{-5} may be considered acceptable for commercial structures but needs to be more conservative for residences.**

51. **Current risk levels are estimated to be between 10^{-5} and 10^{-6} due to concentrations of contaminants in the air inside the dwelling on 1419 Dollar Avenue. Groundwater concentrations at MW-16S have increased from 70.4 ug/L to 215 ug/L indicating a worsening condition due to increased off-site migration of PCE toward the residence.**

    The sub-membrane depressurization system already installed in the residence needs to be operated in an attempt to reduce risk below 1 x 10^{-6} inside the house. The system is in place including the blower and electrical switch and it is reported that only a vent stack needs to be added to make the system operational. We would like the DSCA Program to complete this work so operation of the system can begin.

DENR Response: Comments are noted. For indoor air, DSCA's policy is consistent with the risk approach by EPA and the state's Inactive Hazardous Sites Branch, where indoor air mitigation is required if the Individual Excess Lifetime Cancer Risk exceeds 1.0x10^{-4} or the Hazard Index exceeds 1.0. This approach is intended to ensure that indoor air risks are being managed and monitored while the remedial options are being evaluated and implemented. The Rules and Criteria for Administering the Dry Cleaning Solvent Cleanup Fund (15ANCAC 02S) specify that for carcinogens, the Individual Excess Lifetime Cancer Risk for all chemicals and exposure pathways cannot exceed 1.0x10^{-5}; and for systemic toxicants, the Hazard Index for all chemicals and exposure pathways cannot exceed 1.0. This rule effectively requires that remediation be conducted to reduce the risks to acceptable levels.

Comment(s) Received:

52. **The RAP should also clarify what contingency plans exist should the proposed plan fail to adequately reduce the toxic levels.**

DENR Response: The purpose of the RAP is to describe the proposed remediation and how the effectiveness will be monitored. As described in Section 7.0 of the RAP, soil gas, indoor air, and groundwater will be monitored to evaluate the effectiveness of the remedial actions taken. Based on the evaluation of that data, the DSCA Program will determine what, if any, additional data is needed (to evaluate effectiveness), if any additional remedial actions are warranted, and what those additional remedial actions will be. An evaluation of the effectiveness of the remedial efforts is needed to determine (i) if a contingency is necessary, and (ii) what will be the best contingency plan to address areas or components of the remedy that may turn out to be ineffective.

Comment(s) Received:

53. **Living within the same block as the site, I am extremely concerned about the odors and gases that will be emitted from the site during remediation and after. I am concerned that the air quality in the north end of the neighborhood near the site will be compromised due to the off-gasing results after application of the Aventus products. I would like to see the air quality sampled on a regular basis both during the remediation and after the remediation work has finished to make sure there are no health issues for area residents.**

54. **I request that air quality continue to be monitored after remediation for any and all toxic substances. The monitoring and reporting of the air quality should be on the same schedule as the water and soil vapor.**

55. **The RAP should clarify that post-remediation monitoring will continue until the site has reached a stable, safe condition no matter how many years that may take. I request that the results of this monitoring be posted every 30 days on a DENR website that is made available to all interested parties. The posting should include date, data, and a BRIEF summary of the results, written in a layman's language. (For example, the summary might say something as simple as, "The PCE levels continue to decline by X%. No traces were found of any other toxic substance. The site presents no new health or safety concerns for residents.")**

56. **Soil gas and indoor air concentrations need to be monitored consistently until the 'active life cycle' of remediation materials is exhausted. The intensive monitoring schedule will need to include timely receipt of results and also be extended on the schedule to include the estimated persistence interval of the Adventus remediation materials.**

57. **Indoor air needs to be periodically monitored after remediation is completed until unacceptable risk due to concentrations of contaminants is no longer possible in the dwelling at 1419 Dollar Avenue. The monitoring should be quarterly.**

DENR Response: Any contamination that presents a risk will be monitored until the site reaches a safe and stable condition. Vapor monitoring during the excavation activities is described in Section 6.4.4 of the RAP, and post-remediation monitoring of groundwater, soil gas, and indoor air is described in Section 7.0 of the RAP. As previously noted, verified results will be posted on the DSCA website. As the monitoring data is evaluated, the scope and frequency of future monitoring will become clearer. The future monitoring scope and schedule, beyond what is described in the RAP, will be posted on the DSCA website at www.ncdsca.org "BB&T Site Updates".

Comment(s) Received:

58. **The proposed monitoring of existing wells seems to leave a hole in the perimeter of the known plumes (Figure 11, wells SV-35 and SV-37 and Figure 13, wells MW17I and MW-17S). Please consider including these wells in the planned monitoring.**

DENR Response: Comment is noted. The monitoring points proposed in the RAP are closer to the source area and would detect increases in contaminant concentrations before such increases reach SV-35/SV-37 or MW 17I/17S. However, if an evaluation of the post-remediation monitoring data concludes that it is warranted, soil gas and groundwater monitoring wells farther from the source area would be added to the monitoring program.

Comment(s) Received:

59. **Subsurface Vapor Control - I understand that vents are to be constructed in the backfill to relieve pressure and prevent exacerbation of the current soil vapor plume. I would request assurances that the proposed venting will be done in a manner so as not to exacerbate the existing vapor plume, and that the effectiveness of the pressure venting processes will be monitored to ensure that the venting is working as intended.**

DENR Response: By allowing the subsurface to equilibrate with atmospheric pressure through venting, the buildup of pressure is eliminated. The venting is being installed as a precautionary measure to provide a pathway for vapors should they be generated in the subsurface. Additionally, the vent pipe screen extends into the base of the excavation where very porous stone will be present, which is conducive to increased air flow in the subsurface and equilibration with the atmosphere on-site and prevention of vapor migration off-site. The system will be monitored at sampling ports located along the ventilation piping to ensure it is working as intended.

Comment(s) Received:

60. **I am also concerned about what will be released or off-gassed from these vents into the surrounding community, including whether such off-gassing may be hazardous or explosive. Appropriate steps need to be taken to protect the surrounding residents, church congregation, staff and patrons of businesses and the general public from these vapors and any dangers or risks arising from the venting into the atmosphere. If necessary, posting at the site of any potential risks or concerns should be considered in order to advise and warn area residents and the general public.**

DENR Response: As noted, monitoring of the vent system will be conducted during soil vapor monitoring events (Section 7.1 of the RAP). Vapor off-gassing from the vents is not expected to adversely impact the environment or the public. Section 7.1 of the RAP will also be revised to include the following statement: "If vapor monitoring data indicates an unacceptable hazard exists, immediate steps will be taken to mitigate that condition at that time." During the remediation activities, caution signs will be posted on the fencing that will be erected around the property. While it is not anticipate that warning signs will be necessary after the remediation their use may be considered if warranted.

Comment(s) Received:

61. **Indoor Air Monitoring at Affected Properties - With regard to the three adjacent properties known at this time to be impacted by vapor intrusion (1414 Watts, 1421 Dollar & 1419 Dollar), I am concerned about the vapor levels in these three adjacent properties and how those levels will be impacted by the on-going groundwater contamination and the remedial activities outlined in the RAP. The plan appears to call for pre- and post-injection air quality sampling in these properties, but no such sampling is planned during the approximately three (3) months of excavation, backfill and injection activity. Especially given the fact that groundwater contamination levels appear to be rising from the BB&T Site, and given the changes to the subsurface conditions which will occur with implementation of the RAP, I would request that monitoring be conducted on a monthly basis at these three affected properties throughout the entire RAP process and until the vapor levels and groundwater at those homes and Triangle Community Church have consistently decreased below the action level.**

DENR Response: Although the results from the sampling of groundwater monitoring well MW-16S (completed by a third party) indicate an increase in PCE in this well, there is insufficient data to determine if this is a trend or a natural fluctuation in groundwater concentrations in that specific well. The on-site groundwater concentrations have remained relatively stable since groundwater monitoring began in 2007. The indoor air concentrations observed over time at 1414 Watts, 1421 Dollar & 1419 Dollar have not shown an increasing trend, leading us to conclude that, at this time, any potential fluctuations in groundwater concentrations are not creating an elevated indoor air concern. Monthly monitoring during the excavation is not warranted because (i) the remediation activities are considered short duration actions, and (ii) the vapor monitoring to be conducted

during excavation and post-remediation monitoring of groundwater, soil gas, and indoor air will be sufficient to determine if further indoor air mitigation is warranted and if contingency remedial measures need to be considered. Any contamination that presents a risk will continue to be monitored until the site reaches a safe and stable condition. Section 7.3 of the RAP will be amended to include the following monitoring plan:

1419 and 1421 Dollar Street

Two 24-hour summa canister samples will be collected from the two residences (1419 and 1421 Dollar St) on a monthly basis for three months starting one month after the injection event. The samples will be submitted for laboratory analysis of PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride by EPA Method TO-15. During each event one ambient air sample will be collected as well. Fifteen days after the initial 24-hour indoor air samples are collected, two Radiello 30-day samples will also be deployed at each residence for analysis of PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride. These 30-day Radiello samples will be deployed and collected on a continuous monthly for 90 days.

1414 Watts Street

Two 3-hour summa canister samples will be collected from the church during church service on a monthly basis for three months starting one month after the injection event. The samples will be submitted for laboratory analysis of PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, and vinyl chloride by EPA Method TO-15.

The schedule for indoor air monitoring following the initial 90 days will be determined based on the results of the indoor air results collected at each property as part of this plan and the related discussion and consultation with DSCA staff.

Comment(s) Received:

62. **To the extent that vapor readings at the property boundary demonstrate that levels exceed the standard, I would request that such monitoring also be conducted on adjacent and nearby properties until the levels are shown to be below the applicable standard.**

DENR Response: Due to the rapid diffusion of vapors in outdoor air, taking measurements at the property boundary is more conservative than taking readings off-site. The response actions specified in the RAP will be undertaken if sustained readings are encountered at the property boundary. We will consider monitoring vapors on neighboring and adjacent properties during excavation if the data and circumstances warrant it.

63. **Outdoor Air Monitoring - It is my understanding that, upon completion of paving activities at the site, an ambient air sample will be collected on the site to confirm that the PCE level in the outdoor air is less than the North Carolina air quality acceptable levels (AALs). To the extent that such sampling reveals levels in the outdoor air at the site are in excess of the AALs, I believe that additional air sampling should be conducted on 1414 Watts, 1421 Dollar & 1419 Dollar as well as residences and businesses that are close by that are not currently above the acceptable standards in order to determine if AALs are being exceeded at other locations so that appropriate notice and/or warning can be provided to those area residents.**

DENR Response: Comment noted. It is not expected that ambient air or outside air samples taken after the paving is completed will exceed the AALs. If an exceedance of the AALs occurs, the ambient air will be re-sampled and the results considered in determining the need for sampling ambient air on neighboring properties.

Comment(s) Received:

64. **Contingency Plan for Increased Indoor Air Concentrations Post-Injection - to the extent that indoor air PCE concentrations increase in the affected residential and church properties, I would like for the owner(s), neighbors of those impacted properties and concerned area citizens to have the opportunity to discuss with DSCA any "increased levels of mitigation" proposed for such affected properties, before such mitigation measures are used, in order that owners and residents can ask questions, have concerns addressed, and provide input into any new or additional technical measures to be considered, selected and implemented.**

DENR Response: DSCA will use the soil gas and indoor air monitoring data to determine (i) if additional soil gas and/or indoor air sampling is needed, and (ii) if increased levels of mitigation are warranted. If additional mitigation is necessary, input and feedback from the affected property owner(s) is needed so that the mitigation measures can be designed to achieve the goal of eliminating the vapor intrusion risk while accommodating the owners' concerns.

Comment(s) Received:

65. **I would also request that groundwater sampling be conducted in the surrounding neighborhood during the RAP process, at least on those properties which have previously demonstrated groundwater contamination related to the BB&T Site, in order to evaluate the groundwater plume and migration of the plume from the BB&T Site. I also believe there should be contingency plans in place to modify the proposed remedial actions to address both potential groundwater plume migration and increased vapor intrusion in adjacent and/or nearby properties that is demonstrated by sampling.**

66. **Also, I would request assurances that additional groundwater remedial efforts, including proper monitoring and notification, will be taken at 1414 Watts, 1421 Dollar & 1419 Dollar to reduce the soil vapor gases that have migrated from the BB&T Site and are, and may continue in the future to, negatively impact those properties, the owners and guests/patrons.**

67. **Contaminant concentration surveillance needs to continue until potential increases in risk resulting from increases in groundwater or soil gas concentrations are no longer possible. Groundwater monitoring of sentinel wells for the residences needs to continue at regular intervals until the concentrations of all contaminant constituents are below risk-based standards for indoor air contamination. This recommendation includes the intermediate depth wells given the higher density of PCE which will migrate downward over time. We assume the sampling frequency would match industry standards (e.g., quarterly during critical data evaluation cycles and semi-annually otherwise).**

68. **Groundwater monitoring and sampling – Some of the neighboring properties have high levels of vapors. I believe there should be another round of off-site sampling prior to implementation of the Remedial Action Plan in order to evaluate the potential migration of the plume away from the BB&T Site, and such sampling should continue at reasonable intervals as long as such sampling**

demonstrates the existence of an off-site groundwater plume above state standards. To the extent that sampling reveals continued migration, increasing off-site groundwater contamination levels or increased vapor intrusion levels at off-site properties, DSCA needs to have a contingency plan for addressing such an occurrence, including modification of remedial actions if necessary.

DENR Response: Currently the health risks posed by the subsurface contaminant vapor originating from the BB&T site contamination, to the occupants of 1419 and 1421 Dollar Avenue and 1414 Watts Street, is being controlled by mitigation measures that are in place. The goal of the remediation effort is to significantly reduce the contaminant concentrations in soil and groundwater so these mitigation controls are no longer necessary. Consequently, the groundwater, soil gas, and indoor air will be monitored at regular intervals (as described in Section 7.0 of the RAP) to evaluate how quickly and how much the concentrations are reduced by the remedial actions. Based on an evaluation of that data, the DSCA program will determine what, if any, additional data are needed to evaluate remedial effectiveness, and also determine if any additional remedial or mitigation actions are warranted - and what those additional remedial or mitigation actions will be.

Additional site characterization will be a component of future work at the site, but the RAP is designed to address source removal. The current understanding of vapor intrusion is that it is driven by contamination at or near the water table, so groundwater at intermediate depths is not being evaluated for correlation with vapor intrusion. However intermediate well data will be evaluated for plume expansion.

Comment(s) Received:

69. **Consideration needs to be given to a barrier technology or other off-site treatment for the contaminated groundwater that has migrated toward the residences. The RAP provides for source treatment but does not address off-site migration. It may take a prolonged period for the concentrations to attenuate near the residences without treatment thus providing an opportunity for additional risk to the occupants of the residences.**

DENR Response: Concern is noted. The goal of the RAP is to significantly reduce the source contamination and thereby significantly reduce off-site migration of contaminants into the community. The remediation will affect the subsurface equilibrium in a manner which should reduce contaminant levels on residential properties (in soil gas, groundwater, and indoor air). However, if through an evaluation of post-remediation monitoring there appears to be potential for increased risk from vapor intrusion, additional mitigation and/or remediation measures will be considered.

Comment(s) Received:

70. **Environmental easements. We are aware that the easements will essentially restrict use of the Site to parking and landscaping going forward. Asphalt is expensive and has negative esthetic utility, particularly in a residential neighborhood. Accordingly, the RAP should be modified to require installation of a geostatic barrier some feet below the surface, introduction of soil and a plating of grass or similar.**

71. **I request that the RAP address the appearance of the site once the remediation is completed. Instead of covering the site with asphalt, I request that an impermeable layer be placed over the site and that it be covered with another foot of dirt, grass, and landscaping. I understand that you are already planning to use vents that are as non-intrusive as possible. Thank you.**

DENR Response: Future use of the property after completion of the proposed RAP activities will be decided by the property owner. Land use restrictions that require the property to be capped will remain in effect on the property until PCE concentrations in the groundwater are remediated to the site cleanup goal of 2.5 mg/L. Upon completion of the excavation, the site will be restored to an asphalt parking lot so as not to impose further expenses for maintenance requirements on the current property owner.