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Introduction

The Crab Creek Conservancy appreciates this opportunity to submit its comments regarding the preliminary Forest Conservation Plan (FCP) following the virtual public meeting held on November 10, 2021. Crab Creek Conservancy is a 501(c)(3) registered charitable organization dedicated to the conservation and preservation of the Crab Creek Watershed on the Annapolis Peninsula. Crab Creek Watershed includes portions of both Masque Farm and Crystal Spring Farm (CSF) and Forest, aka the "Katherine Property," hence our organization has a high level of interest in this project.

The unique ecological values of CSF and surrounding area are extraordinary for the Annapolis Peninsula. The site is home to some of the highest biodiversity found anywhere in the City, and it provides multiple important ecological services for carbon sequestration, air quality, flood mitigation, wildlife habitat, and water quality, among others. The site is inappropriate for large-scale development and would ordinarily be included as the cornerstone of any other municipality's protected green infrastructure portfolio. In fact, the proposed development uses for CSF are so out of synch with its natural values, that the forest on the Katherine Property has been designated one of America's most threatened forests by the Old Growth Forest Network.[1] Subsequently, Crab Creek Conservancy believes that the long-term environmental benefits to the community of CSF far outweigh any economic benefits that could be gained through a planned development such as The Village at Providence Point (VPP) (Project No PD2019-001). The Conservancy also believes that the City must do all that it can to align these natural values with an appropriate land use designation, such as permanent conservation land for the entire site.

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[1] Old Growth Forest Network. 2021. Threatened Forest Index.

The project applicants, National Lutheran Communities and Services (NLCS) and Alan Hyatt, have failed to address multiple shortcomings in the preliminary FCP, which we will outline here. In addition, the November 10, 2021 public meeting for the preliminary FCP was inadequately advertised, published only in the local Capital Gazette Newspaper, a paid service, and posted along Forest Drive and Spa Road with nothing posted on the City's website or website address provided.

I. The public notification process for this public meeting was conducted in a way that prevented true transparency and dissemination of information that is of high public interest.

The public notification process was not done in a way that truly promotes transparent and public dissemination of information. There was no information posted on the City's website or calendar, which is where the majority of the public goes for meeting information that is of interest to them, especially for any information that affects decision-making processes or outcomes at the municipal level. Although the meeting posted along Forest Drive and Spa Road, as required by O-22-16, the sign(s) only provided the name of Tom Smith at the Dept. of Planning and Zoning (P & Z) along with his phone number, but no information about how to access the virtual public meeting scheduled on November 10th. Upon calling the phone number for more information some 10 days ahead of the meeting, Crab Creek Conservancy was unable to reach Mr. Smith directly and so left a message. However, the Conservancy did not receive any call back from Mr. Smith and was left wondering how to access to the virtual public meeting, as no information or links to the City's Youtube Channel were provided on the P & Z website, nor was it posted on the City Calendar.

The posting did provide the project number (PD-2019-001), however, no information about this meeting is provided in the project docket, which only serves as a repository for submitted project and permitting documents by the applicant and other stakeholders.

At the end of the virtual public meeting, Mr. Smith announced that the meeting had been advertised in the Capital Gazette newspaper. This has several problems. The Capital Gazette is a paid subscription service, not a public bulletin board or forum. Print newspapers are increasingly decreasing in circulation. The Crab Creek Conservancy and many other smaller non-governmental organizations (NGO's) do not subscribe to the print version of the Capital Gazette. In addition, as one employee of the Capital Gazette has publicly acknowledged, the online version of this newspaper has a paywall that prevents everyone but subscribers from accessing important public information, such as election information.[2] This barrier to publicly available information

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[2] DuBose, Brooks. 2021. Tweet sent Sept. 20, 2021 acknowledging removal of paywall for election information.

is so obvious, that Brooks DuBose had this paywall removed for important election information that should be made freely available.[3]

Many low income Annapolis residents who live in public housing would also not have access to information published in the newspaper, either online or in print, due to its subscription barrier. For example, current and future public housing residents, especially any future residents of the soon to be renovated Newtown 20 public housing development are a major stakeholder that may not have the means to afford a subscription to the Capital Gazette. If the City is serious about public engagement, it will find ways to engage these stakeholders via direct outreach, including distribution lists to Annapolis Housing Authority (AHA) and additional posting in nearby public housing communities, such as Robinwood and other nearby Section 8 housing.

Given the above information and given the scale and significance of the VPP proposed development and its potential impacts, the City Dept. of P & Z must do better to share and distribute all information related to all public meetings, hearings, and other opportunities for public engagement on the VPP development.

II. The requirements under the Annapolis FCA Ordinance (O-22-16) do not adequately protect unique forest sites and other habitats such as Crystal Spring Forest.

A. The requirements under the Annapolis FCA Ordinance (O-22-16) are based on outdated science.

The Maryland FCA under Natural Resources Article 5-1601-1612 was passed in 1992 at a time when forest restoration science was still in its infancy. Since then, much research has been done to identify knowledge gaps and best practices in forest ecosystem function restoration.[4]

B. The FCA Ordinance O-22-16 fails to address climate change.

The climate is changing. Historical baseline conditions are no longer sufficient for projecting forest growing conditions of the future. Increased frequency, severity, and degree of floods, droughts and extreme heat events are not only predicted by expected in the coming decades. This has significant implications for forest mitigation and restoration.[5]

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[3] *Ibid*.

[4] Vallauri D., Aronson J., Dudley N., Vallejo R. (2005) Monitoring and Evaluating Forest Restoration Success. In: Forest Restoration in Landscapes. Springer, New York, NY.

[5] Chaudry, Smita, Gagan Preet Singh Sidhu, & Rashmi Paliwal. 2021. Restoring Ecosystem Services of Degraded Forests in a Changing Climate. *Handbook of Ecological and Ecosystem Engineering, Chapter 19 (*Majeti Narasimha Vara Prasad, ed.). John Wiley & Sons Ltd.

C. The FCA Ordinance O-22-16 and the Maryland FCA both allow street trees to qualify for mitigation of priority forest loss, a practice that is now recognized as having major limitations in restoring ecological function of forested areas.

Annapolis FCA ordinance O-22-16 section 27.71.00 under paragraph (A)(1)(ii)(a) allows for street trees as a "permissible step in the priority sequence for afforestation or reforestation…" While this may have seemed like a pragmatic approach given the scarcity of available space for reforestation and afforestation projects as mitigation for land development projects, the limits of these practices have been much better documented since the passage of the 1992 FCA. Urban street trees may grow more quickly but may also die more quickly than their forest counterparts.[6] This has significant implications for long-term mitigation measures and metrics of forest loss, requiring long-range planning and investment for tree replacement.

Urban street trees also intercept less stormwater, store less carbon, and provide lower quality and less wildlife habitat than closed-canopy forests.[7,8,9] These valuable ecosystem services, which have become cornerstones of modern forest restoration, are largely neglected in the city's FCA ordinance.

III. The preliminary FCP for The VPP contains multiple shortcomings that will result in inadequate forest mitigation for the scale and extent of the proposed priority forest loss.

A. The preliminary FCP fails to protect the diverse array of habitats found on the Katherine Property.

As previously stated, the Katherine Property and CSF are comprised of several important habitat types besides the extensive priority forest located on the property. The preliminary FCP proposes to plant some 7,000 trees in the old fields and wet meadows, which are habitat for several bird species of state Greatest Conservation Need (GCN).[10] No mitigation for these habitat types is proposed.

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[6] Ian A. Smith, Victoria K. Dearborn, Lucy R. Hutyra. Live fast, die young: Accelerated growth, mortality, and turnover in street trees. *PLOS ONE*, 2019; 14 (5): e0215846 DOI: 10.1371/journal.pone.0215846

[7] Berland A, et al. The role of trees in urban stormwater management. *Landsc. Urban Plan.* 2017;**162**:167–177.

[8] Nowak, David J. And Daniel Crane. 2001. Carbon storage and sequestration by urban trees in the USA. *Environmental Pollution* 116 (2002) 381–389

[9] Natural Resources Conservation Service. 2002. Managing Forests for Fish and Wildlife. Wildlife Habitat Management Institute, Fish and Wildlife Habitat Management Leaflet No. 18, December 2002.

[10] Maryland Dept. of Natural Resources. 2015. Maryland State Wildlife Action Plan. Chapter 3.

Grasslands such as meadows have been steadily declining in Maryland.[11] These meadows provide important breeding, stopover, and wintering habitat for several GCN bird species. Wintering American Woodcock, which historically have bred at the site but have been displaced due to encroaching development, use the area from late fall through early spring.[12] Yellow-breasted Chats (GCN) have attempted to nest at the site as recently as 2015 (Cornell Lab of Ornithology, 2015).[13]

B. The preliminary FCP does not address fragmentation and forest loss from the development, especially impacts to GCN forest species.

Several species of GCN birds use the large block of continuous forest at CSF. These species include American Redstart, Ovenbird, Wood Thrush, Acadian Flycatcher, Black-and-White Warbler, Yellow-throated Vireo, and Scarlet Tanager. Of these, Acadian Flycatcher and Scarlet Tanager have bred or attempted to breed as recently as 2021. Other species may be using the site for nesting, however, since there is no regular breeding season monitoring program on the site, and the developers' studies have not been conducted during the neotropical bird nesting season, other GCN species may still be using the site to breed despite this lack of detection. The applicants' own surveys attest to this data gap, as submitted project documents document how Wetlands Studies and Solutions only visited the site on March 27th, 2020, to conduct its wildlife assessment.[14] This is well before the breeding season of most migratory bird species.

The main footprint of the project will occupy some 34 acres of the northeast end of the Katherine Property, forever removing more than 27 acres of primary forest from this large continuous forest block. As the next subsection outlines, planting of trees in the wet meadows and grasslands adjacent to the forest will far from guarantee forest ecosystem function will be maintained. In addition, the noise pollution, human disturbance, increased traffic, and general commercial and human activity (e.g., vehicular movement, petrochemical runoff, litter, lawn care chemicals, etc.) in and around the site will take their toll in perpetuity on the wildlife that today utilize this priority forest block. The footprint of the project will displace the species and individuals that nest and burrow there; there will also be a surrounding impact well into the existing remaining stands of forest, which can extend many hundreds of feet into a forest and even result in diminished tree health and higher tree mortality in remaining forest stands (Snyder 2014)[15].

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[11] Maryland Dept. of Natural Resources. 2021. Maryland's Wild Acres.

[12] Cornell Lab of Ornithology. 2019. eBird checklist submitted by M. Iliff December 29, 2019.

[13] Cornell Lab of Ornithology. 2015. eBird checklist submitted by M. Iliff June 13, 2015.

[14] Wetlands Studies and Solutions. 2020. Responses to Comments April 30, 2020. As posted on Annapolis P & Z Permit and Project eTrackit system.

[15] Snyder, Micheal. 2014. What is Forest Fragmentation and Why Is it a Problem? Northern Woodlands. Lyme NH. Autumn 2014.

C. The mitigation proposed in the preliminary FCP does not adequately mitigate loss of priority forest; does not account for tree mortality and attrition as part of its proposed forest mitigation; and does not include a long-term monitoring plan.

First, let's be clear: tree plantations are not forests. The planting of trees does not inherently restore forest ecosystem function, and scientists have identified many problems with traditional forest restoration practices, including lack of available suitable genetic material for a given site and the inappropriate use of historic conditions as a reference for practical restoration in a changing climate (Löf et al. 2019)[16].

The preliminary FCP admits outright that it is not going to reforest the full 27.30 acres of priority forest lost. Only 23.80 acres are going to be "reforested" by taking over the valuable wet meadow and grassland habitats and use the for a tree plantation. The remaining 3.50 acres of forest mitigation credit will come from street tree planting. It cannot be disputed that street trees are not forests, and thought they provide benefits for urban and suburban residents, they do not provide anywhere near the ecosystem function that forests provide. That the City is allowing the 3.50 acres of street tree planting to be given credit for removing the equal amount of priority forest, though technically allowed by the Maryland FCA and O-22-16, is an antiquated approach based on 1980's science and is inappropriate for the 2020's when most scientists now agree we are near a tipping point on climate change.[17]

Insufficient information is given in the preliminary FCP about the applicants' plans for maintenance and monitoring of the forest restoration/afforestation sites, and what is provided fails to meet the requirements of the O-22-16 and current forest ecosystem science standards. The Annapolis FCA Ordinance O-22-16 section 27.71.070 (B)(2)(x) states that the preliminary FCP shall:

> "Incorporate a proposed **five year maintenance agreement** that shows how areas designated for afforestation or reforestation will be maintained to ensure protection and satisfactory establishment;"

During the November 10, 2021 virtual public meeting on the preliminary FCP, the applicant's consultant, Wetlands Studies and Solutions, proposed only two years of maintenance and monitoring, with only one optional additional year proposed, if "needed". This short of a maintenance and monitoring period falls far short of the City's own FCA Ordinance O-22-16 requirements in section 27.71.070 (B)(2)(x). Current forest

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[16] Löf Mangus, Palle Madsen, Marek Metslaid, Johanna Witzell, & Douglass F. Jacobs. Restoring forests: regeneration and ecosystem function for the future. New Forests 50 139-151 (2019)

[17] Ripple, William & 15,370 scientists signatories from 184 countries. 2017. World Scientists' Warning to Humanity: A Second Notice. BioScience, Volume 67, Issue 12, December 2017.

restoration science recommends a minimum of 10-15 years of monitoring.[18,19] In addition, no criteria were laid out in the preliminary FCP as to how the applicant's consultants will make the determination for additional monitoring, and no measures or metrics of successful regeneration and restoration were provided. In addition to a minimum of 10-15 years of monitoring, these elements must be provided in the preliminary FCP in order to ensure successful restoration and reforestation/ afforestation.

The preliminary FCP proposes to use "transplant stock" for species such as Sweetgum, which would be replanted on some of the proposed afforestation sites. No accounting for tree mortality during this transplanting is provided, nor is there any methodology proposed for maintaining tree health during this tree transplanting. These elements must be provided for a preliminary FCP to be acceptable by today's scientific standards for forest ecosystem restoration.

Street tree and urban tree mortality rates range from as low as 0.6% to as high as 68.5% (Hilbert et al. 2019).[20] The preliminary FCP must account for the potential for high mortality rates of all trees planted and replanted, particularly in a changing climate when extreme flood events and extreme droughts are becoming increasingly commonplace. For example, Princeton researchers recently projected that 100-year flood events will likely be occurring every 1-30 years.[21] Recent summer conditions from the last five years in our region have also demonstrated how increasing severity of summer heat and drought have taken their toll urban street trees, especially newly planted ones.[22]

D. The preliminary FCP fails to mitigate direct climate change impacts of the proposed development.

No accounting of the carbon emissions caused by removing all of the trees from the priority forest is provided in the preliminary FCP. The priority forest at CSF stores on

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[18] DeMeo, Thomas, Amy Markus, Benard Bormann, and Jodi Leingang. 2015. Tracking Progress: the Monitoring Process Used in Collaborative Forest Landscape Restoration Projects in the Pacific Northwest. Ecosystem Workforce Program Working Paper No. 54.

[19] Vallauri D., Aronson J., Dudley N., Vallejo R. (2005) Monitoring and Evaluating Forest Restoration Success. In: Forest Restoration in Landscapes. Springer, New York, NY.

[20] Hilbert, Deborah R., Lara A. Roman, Andrew K. Koeser, Jess Vogt, & Natalie van Doorn. 2019. Urban Tree Mortality: A Literature Review. Arboriculture & Urban Forestry. 45(5):167-200.

[21] Marsooli, Reza, Ning Lin, Kerry Emanuel, & Kairui Feng. Climate change exacerbates hurricane flood hazards along US Atlantic and Gulf Coasts in spatially varying patterns. *Nature Communications*. 10, Article No. 3785 (2019).

[22] Ahmadjanov, Shuhratjon. 2021. Our trees are dying where they stand. Street Sense Media, August 18, 2021.

average between 75-80 tons of carbon per acre.[23,24] This would result in some 2,040 tons of carbon emissions from just the removal of priority forest alone. Emissions from construction vehicles, soil carbon loss, and additional clearing of non-priority forest vegetated areas would result in even greater carbon emissions.

No mention of these direct climate change impacts from construction on site and the destruction of existing priority forest, a critical carbon sink on the Annapolis Peninsula, is given in the preliminary FCP, nor is there any proposed mitigation for these direct impacts. These elements must be provided for a preliminary FCP to be acceptable by today's scientific standards for forest ecosystem restoration.

E. The preliminary FCP fails to adapt its proposed mitigation plan to long term potential climate change impacts.

The preliminary FCP is using an outdated baseline when it comes to its projections for meeting its reforestation and afforestation goals and objectives. The FCP fails to account for a changing climate in everything from its tree species selection to maintenance and monitoring.

As stated earlier, increased frequency and severity of extreme heat, drought, and flood events are increasingly likely with each passing year. Such extreme climate and weather events result in higher tree mortality, particularly young or newly planted trees that have not yet had a chance to establish deep root growth. Increased mortality from forest pests that result from increased range expansion and adaptability due to climate change is yet another climate-related threat. This is also exacerbated by the increased amounts of global trade and commerce at our ports. The subsequent arrival and expansion of invasive forest pests is considered to be one of the greatest threats to northeastern forests in the upcoming decades, and there are many examples from the past 20 years that provide strong evidence of this threat.[25]

Conclusions

Annapolis FCA Ordinance O-22-16 was designed to address straightforward development issues to maintain urban tree canopy cover within city limits. It was not designed to address mega-scale development projects such as the VPP that are proposed on crown jewel ecological sites. CSF is an extraordinary site. Given the significance of CSF to the ecology of the Annapolis Peninsula and given the scale and

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[23] United States Forest Service. 1992. Carbon Storage and Accumulation in United States Forest Ecosystems. General Technical Report WO-59.

[24] Keith, Heather, Brendan G. Mackey, and David B. Lindenmeyer. 2009. Re-evaluation of forest biomass carbon stocks and lessons from the world's most carbon-dense forests. Proceedings of the National Academies of Sciences. Vol. 106 No. 28, July 14, 2009.

[25] Haavik, L. 2019. Northeastern US Forest Pests. (February, 15, 2019). U.S. Department of Agriculture, Forest Service, Climate Change Resource Center.

impact of the proposed VPP project, the resulting destruction would require exceptional mitigation measures in order to be deemed adequate under the spirit and intent of the Maryland FCA. The preliminary FCP does not meet the bar to sufficiently mitigate the impacts caused by the removal of so much priority forest from Annapolis city limits.

The applicants must resubmit a newly redesigned FCP that is appropriate to meet 21st century conditions, including how it will mitigate climate impacts and how site management will adapt to climate change. In addition, the proposed monitoring and site management period is woefully insufficient and does not meet the requirements listed in O-22-16 section 27.71.070. A robust site management and monitoring plan that spans 15 years is recommended.

Forrest Mays
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