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[www.ogeecheeriverkeeper.org](http://www.ogeecheeriverkeeper.org)  
*Working Together to Protect the Ogeechee, Canoochee and Coastal Rivers*

July 3, 2024

**Via E-Mail**

Caity McKee, Senior Regional Planner  
Coastal Regional Commission of Georgia  
[cmckee@crc.ga.gov](mailto:cmckee@crc.ga.gov)

**Re: Comments on DRI # 4206 - Garrison Tract PUD - Pembroke**

Dear Ms. McKee:

Ogeechee Riverkeeper 501(c)(3) (ORK) works to protect, preserve, and improve the water quality of the Ogeechee River basin, which includes the Canoochee River, tributary streams, and all of the streams flowing out to Ossabaw Sound and St. Catherine's Sound. The Ogeechee River system drains more than 5,500 square miles across 21 counties in Georgia. ORK works with local communities to retain the ecological and cultural integrity of rivers, streams, wetlands, and related habitats throughout the Basin. One of ORK's primary roles is as watchdog on new land development projects throughout the watershed that could pose a significant threat to its water quality and aquatic environments.

ORK's comments on the Garrison Tract Planned Unit Development (PUD) fall into five overarching categories. First, Pembroke should complete its planned housing study before this or any other PUD or significant housing project is approved. Second, all construction should be wholly avoided within floodplains and flood risk areas. Third, stormwater management should take a long-term view of projected demand over the whole life of the development. Fourth, water supply and wastewater treatment demand should be fully confirmed prior to any approval or construction. Fifth and finally, wetlands, natural areas, and green spaces should be protected in order to preserve Pembroke's rural character, ecosystem functions, and natural flood control. ORK urges careful consideration of these topics prior to any rezoning, permitting, or construction permission decisions from the City of Pembroke and, ultimately, urges the City to deny this rezoning and development request unless all concerns are fully and sufficiently addressed.

1. Update Housing Study

The City of Pembroke should update its housing study prior to approving this or any other large housing development. With the likely influx of new residents to Pembroke, it is crucial that the City fully understands its existing housing stock, the types of housing that are anticipated to be needed, locations available and suitable for new housing

developments, infrastructure capacity and needed expansions, and how much will be needed. Without this information and thoughtful planning, the City of Pembroke risks making hasty site choice, construction, and development decisions at this critical time in the City's development. ORK urges the City of Pembroke to pause any decisions on new housing developments until this housing study update is completed and is able to guide the City's planning efforts.

Pembroke's 2023 Comprehensive Plan Update<sup>1</sup> identified the need for a housing study update. The Comprehensive Plan's steering committee noted that the last housing study was completed in 2013-14.<sup>2</sup> Much has changed in the intervening decade, and even more change is anticipated in the next decade. It is crucial that the City of Pembroke methodically and carefully plans for this growth ahead of these momentous housing decisions in order to avoid easily preventable issues in the long-term. ORK asks the City of Pembroke and its decision makers to complete an updated housing study and fully consider how it will grow its housing stock.

In summary, ORK asks that:

- The City of Pembroke complete an update to its housing study to better prepare for new housing projects, and
- In the meantime, no rezoning, annexing, or construction permitting be approved for new housing projects.

## 2. Disallow Construction within Floodplains to Reduce Long-Term Risk

Whenever this tract is developed, the floodplains present on the Garrison Tract should be central in the proposed design and construction of this development. A significant portion of the proposed properties are located in the Federal Emergency Management Agency's (FEMA) designated 1% Annual Chance Flood Hazard area, also known as the 100-year floodplain. Of particular concern are the blue lots 1-8, 21-23, and potentially 43 & 44, as well as pink lots 125-129, which all appear to be located within the 100-year floodplain. Likewise, Outparcels 1 and 2 both appear to contain significant portions of the 100-year floodplain. Nearly the entirety of the rest of the properties in the 0.2% Annual Chance Flood Zone areas, also known as the 500-year floodplain. A development with the vast majority of its properties within flood zones is concerning.

Flooding will almost certainly be an issue for any structures built on this property. While the "100-year" flood zone name implies that floods will only occur once every 100 years, this obscures the actual risk. Over 30 years, the actual flood risk is 26%<sup>3</sup> - a more than 1 in 4 chance for properties in the 100-year floodplain. And while the 500-year floodplain, or 0.2% Annual Chance Flood Zones, sees a lower likelihood of flooding, the risk still exists. This creates risks and financial pressure for all future property owners who may face significant flood damage and the following

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<sup>1</sup> City of Pembroke. "2023 Comprehensive Plan Final Draft." Available at: [https://pembroke.sophicity.com/Assets/Files/Pembroke\\_ComprehensivePlan\\_FinalDraft\\_033023.pdf](https://pembroke.sophicity.com/Assets/Files/Pembroke_ComprehensivePlan_FinalDraft_033023.pdf)

Georgia Department of Community Affairs notes a June 20, 2023 submittal date, see <https://www.dca.ga.gov/sites/default/files/pembrokeci.cmpplnupdt.adopted.pdf>

<sup>2</sup> GA DCA-hosted Comprehensive Plan. At page 130/192. See: <https://www.dca.ga.gov/sites/default/files/pembrokeci.cmpplnupdt.adopted.pdf>

<sup>3</sup> See <https://savannahga.gov/FAQ.aspx?QID=332> and <https://www.floodsmart.gov/flood-zones-and-maps>

increases in insurance rates. It is also important to remember that the FEMA flood zones are based on historic rainfall and flooding data. As storm frequency and intensity is expected to increase in the coming decades, the actual risk of flooding will likewise increase, increasing the likelihood and damage from flooding events. ORK urges the City of Pembroke's decision makers to keep these flooding concerns in mind when making these planning decisions and to avoid allowing new structures to be built within the floodplain whenever possible. In particular, ORK asks that no structures are built in the 100-year floods, particularly lots 1-8, 21-23, 43 & 44, and 125-129, as well as portions of Outparcels 1 and 2.

In summary, ORK asks that:

- The City of Pembroke does not allow construction within the 100-year floodplain,
- Developers adjust their conceptual plan to avoid building lots 1-8, 21-23, 43 & 44, and 125-129, as well as portions of Outparcels 1 and 2 in the floodplain, and
- Careful consideration goes into building within the 500-year floodplain.

### 3. Require Forward-Looking Stormwater Management for Growing Management Demand

On-site stormwater management should be as resilient as possible. As noted above, storms are becoming strong and more frequent. This, combined with increasing the impervious surface cover on the properties, will increase stormwater management demand in the area. To reduce negative flooding and inundation impacts, the applicants should work to reduce pressure where possible. Reducing impervious surface coverage, constructing retention features well above minimum requirements, and preserving wetlands wherever possible will help to reduce this pressure.

While the DRI materials contain no specific indication that stormwater retention ponds will be utilized, it is likely the developers will do so in the designated "stormwater management areas." If stormwater retention ponds or other similar features are planned for the site, ORK urges the City of Pembroke to require the developers to go beyond the minimum required standards. In such a low-lying area, increased stormwater pressure can quickly lead to flooding issues on the proposed PUD property and onto neighboring properties. And with storms becoming more frequent, previous stormwater processing calculations are less intense than the retention ponds will likely be required to retain and process. To extend the functional lifetime of these retention ponds and to successfully prevent flooding, ORK urges developers and decision makers to go beyond minimum standards in constructing these stormwater features.

Further, The City of Pembroke should take into account historic and future storm frequency and intensity when calculating stormwater demand and retention pond construction. ORK suggests basing management and construction on the 100-year and/or 500-year storms. Like with floods, these estimates are based on the likelihood of these storms occurring. Currently, the Savannah area's 100-year storm would add 10 inches of rain in a 24-hour period, with the 500-year storm raining 20 inches in 24 hours.<sup>4</sup> In Pembroke, those numbers are 9.6 in and 13.1 in over a 24-hour period for the 100 and 500 year storms.<sup>5</sup> It is important to note that these storms are understood to be smaller than recent data

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<sup>4</sup> See Question 16 at <https://www.savannahga.gov/FAQ.aspx?QID=307>.

<sup>5</sup> NOAA Atlas 14 Point Precipitation Frequency Estimates. Available at: [https://hdsc.nws.noaa.gov/pfds/pfds\\_map\\_cont.html?bkmrk=ga](https://hdsc.nws.noaa.gov/pfds/pfds_map_cont.html?bkmrk=ga).

show and future estimates predict, as the current NOAA calculations are based on 2016 data.<sup>6</sup> To extend the functional life of these features in protecting the area from flooding, ORK urges the City of Pembroke to require stormwater features to retain 125% of the 100-year storm<sup>7</sup> or 100% of the 500-year storm.

In further determining how best to manage long-term stormwater demand, the City of Pembroke should seek confirmation from the applicants of the percentage of impervious surface expected from the development. The applicant's submissions state that only 21% of the development will be impervious surface. This estimate stands in stark contrast to other recent PUD proposals around Pembroke, which average 49.6% impervious surface coverage.<sup>8</sup> ORK welcomes developments that reduce impervious surface cover to the maximum extent possible. However, the drastic difference between the Garrison Tract proposal and all other recent PUD proposals as well as the density of development in the Conceptual Site Plan raise questions. ORK urges the City of Pembroke to seek confirmation from the applicants about impervious surface cover, and rely on the correct coverage in calculating stormwater demands and management.

In summary, ORK asks that:

- The City of Pembroke ensures resilient construction of stormwater management structures able to process increasing storm intensity and frequency,
- Existing wetlands be preserved to ensure their continued role in natural, cost-free stormwater management,
- Artificial stormwater management structure be built to process either 125% of the 100-year storm or 100% of the 500-year storm, and
- The developers confirm their estimated impervious surface cover in light of estimates from other PUDs in the area.

#### 4. Confirm and Secure Water Supply and Wastewater Treatment Capacity

Both the water supply and wastewater treatment needs of any development in coastal Georgia must carefully consider its long-term impacts, implications, and viability. With existing restrictions on new groundwater withdrawals and large amounts of new housing developments being proposed, the City of Pembroke should make a fully informed decision of the near- and long-term impacts and viability of this housing development in light of the additional strains it will place on groundwater resources. Likewise, wastewater treatment should take a long-term view and embrace a regional approach to respond to the areas anticipated and projected growth.

Any new water withdrawal demand should be carefully considered. Under the Georgia Department of Natural Resources' Coastal Georgia Water & Wastewater Permitting Plan for Managing Salt Water Intrusion (2006 Plan), the

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<sup>6</sup> See UGA

(<https://site.extension.uga.edu/climate/2020/05/has-the-100-year-storm-changed-over-time-it-may-depend-on-where-you-are/>) and Dudek Consultants (<https://dudek.com/will-your-flood-control-system-work-in-a-100-year-event/>).

<sup>7</sup> 125% of a 9.3 in storm is 11.625 in.

<sup>8</sup> Compare to Warnell-GSL Cattle (DRI #4204) 53% impervious surface cover ; Warnell Farms (#4118) 50% ; Wyndham (#4099) 45% ; Blue Fern Village (#4215) 60% ; Highway 119 (#4212) 40% ; and Lucky Joe (#4207) 50%.

City of Pembroke and Bryan County fall in the “Yellow Zone” management area.<sup>9</sup> The 2006 Plan establishes withdrawal restrictions for this zone that include conservation and reuse considerations as well as a justification of need. Importantly, the 2006 Plan also limits all total permitted withdrawals in the Yellow Zone to approximately 20.3 million gallons per day (MGD). At a recent meeting, the Georgia Environmental Protection Division (GA EPD) noted that in 2022, the average annual permitted withdrawals for the Yellow Zone were 30.114 MGD, with a 2025 scheduled limit of 29.092 MGD. Continued overutilization of the Floridan Aquifer threatens to increase the rate of saltwater intrusion, endangering the region’s main drinking water supply.

In light of the region’s anticipated growth, demand and strain on the aquifer will only increase if piecemeal permitting is used rather than a methodically considered approach. The City’s recent request<sup>10</sup> to increase withdrawals from its Bulloch County-located well is a finite increase to available water supply. ORK urges the City of Pembroke local, regional, and state decision makers to take a regional, long-term, and holistic view of the water supply demand issue and develop comprehensive and sustainable solutions that will allow future generations to thrive throughout Georgia’s northern coastal region. This should include quickly pursuing alternative, non-groundwater sources of water to offset industrial water demands to preserve groundwater for drinking water and agricultural needs. Likewise, Pembroke must place this and all proposed housing development in context with each project to determine if and how all will be able to have its water supply demand met.

Wastewater treatment must also be considered in the context of the quickly growing area where the Garrison Tract development is proposed. Ultimately, the City of Pembroke should strongly consider and begin pursuing a regional solution to its growing wastewater treatment needs. In its application, the Garrison Tract PUD will require treatment capacity for ~0.057 MGD of wastewater. The applicant plans to rely on the City of Pembroke to treat 57,000 gallons per day (GPD). This single project will use 19% of the City’s recent 300,000 GPD expansion. When placed in context with other proposed housing projects,<sup>11</sup> the City of Pembroke will not be able to meet all of this wastewater demand.

As development continues and available land becomes more scarce, it will be more difficult to site and rely on a scattering of on-site treatment systems to address wastewater treatment capacity needs. The construction and operation of the nearby North Bryan Water Reclamation Facility presents an opportunity to address long-term wastewater treatment capacity needs in Pembroke and North Bryan County as a whole. Further, on-site septic, land application systems, and “package” treatment plants<sup>12</sup> all present expensive and long-term maintenance concerns for relatively small amounts of treatment. Likewise, these options also create potential long-term water quality and pollution concerns. With such a high percentage of the land being within floodplains, septic systems are especially not a good option. ORK urges the City of Pembroke, along with other city, municipal, county, and state decision makers to take a regional view and approach to addressing growing treatment demands ahead of anticipated growth. Further,

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<sup>9</sup> Georgia Department of Natural Resources. “Coastal Georgia Water & Wastewater Permitting Plan for Managing Salt Water Intrusion” (2006 Plan). June 2006. *Available at:*

[https://www1.gadnr.org/cws/Documents/saltwater\\_management\\_plan\\_june2006.pdf](https://www1.gadnr.org/cws/Documents/saltwater_management_plan_june2006.pdf)

<sup>10</sup> EPD issued a notice on June 27, 2024 for expansion of Permit No. 016-0009.

<sup>11</sup> The Warnell-GSL Cattle PUD will demand ~500,000 GPD (166% of the recent expansion), the Highway 119 PUD will demand 90,000 GPD (30% of the recent expansion), and the Lucky Joe PUD will demand ~110,000 GPD (36% of the recent expansion).

<sup>12</sup> EPA. “Wastewater Technology Fact Sheet - Package Plants.” Sept. 2000. *Available at:*

[https://www3.epa.gov/npdes/pubs/package\\_plant.pdf](https://www3.epa.gov/npdes/pubs/package_plant.pdf)

ORK urges the City of Pembroke to avoid any reliance on septic systems or package plants to meet treatment demand in order to avoid future remediation for failing or aged-out systems.

In summary, ORK asks that:

- The City of Pembroke confirms its ability to meet increased water demand for this project as well as future growth,
- The City of Pembroke confirms its ability to meet increased wastewater treatment demand, especially considering the limited capacity available after expansion, and
- Septic, land application systems, and “package” plants and other on-site wastewater treatment be avoided wherever possible and that regionalization of wastewater treatment be pursued to increase capacity.

#### 5. Thoughtfully Preserve Wetlands, Natural Areas, and Green Space

In developing the Warnell-GSL Cattle PUD, specific attention should be given to protecting and preserving the area’s critical natural resources. The development should thoughtfully preserve the large amount of spaces designated as Areas of Significant Natural Resources in order to maximize these areas’ positive benefits on the region and its residents through preserving its rural character, recreational activities, flood control, and ecological integrity. ORK asks the developers to proactively plan its open space, green space, and recreational areas.

While thoughtful open space, green space, and recreational areas can take many forms, ORK offers these suggestions for planning purposes. First, the existing wetlands and floodplains should be maintained for the reasons mentioned above. Second, other existing natural features should be maintained and be the starting point for further development. Third, trees should be preserved and any cutting or clearing should be avoided. Finally, ORK suggests wherever possible that these open and green spaces are as contiguous as possible, avoiding a patchwork of smaller, less beneficial space.

Thank you in advance for your time and consideration; please let me know if you have any questions:

[ben@ogeecheeriverkeeper.org](mailto:ben@ogeecheeriverkeeper.org).

Ben Kirsch, Legal Director  
Ogeechee Riverkeeper