

St. Croix Environmental Association
A Chapter of the Virgin Islands Conservation Society
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Syed Syedali and Emanuel Liburd
Environmental Protection Division
Department of Planning and Natural Resources
45 Mars Hill
Frederiksted, VI 00840

August 9, 2008

Dear Mr. Syedali and Mr. Liburd,

Following are comments from the St. Croix Environmental Association (SEA) regarding the water appropriation permit application of Southgate Development Group, LLC.

Summary

1. SEA recommends that no water appropriation permit be issued until Southgate Development Group, LLC demonstrates that either no water treatment is necessary or adequate provision has been made for brine discharge from any RO or other water treatment plant.
2. SEA recommends that no water appropriation permit be issued until Southgate Development Group, LLC demonstrates that grey water discharge from Aquaklear® mini-wastewater treatment plants will optimize groundwater recharge.
3. SEA recommends that the developer utilize semi-pervious surfaces for roads, drives and parking areas in order to increase groundwater recharge and decrease stormwater runoff to the extent feasible.
4. The developer must ensure that alterations in surface water hydrology resulting from earth change, building and road construction and groundwater appropriation not impact the quantity or quality of freshwater delivered to the pond located on the property.
5. SEA recommends that DPNR proceed very conservatively on permitting any additional water appropriation until the water budget of the Southgate Watershed and underlying aquifers is better understood.
6. After satisfaction of the above recommendations 1 - 4, and consistent with recommendation 5, SEA recommends that any water appropriation for the total 57-acre area be permitted for not more than 7,700 gpd.

Discussion

Southgate Development Group proposes to develop 230 single-family homes and townhouse units on 57 acres in the Southgate Valley Watershed West Gut Sub-catchment. According to a Hydrology Report prepared for the Developer by George Suarez, P.E., approximately 30% of the 57-acre Southgate Crossing housing project will be under impervious building roofs, driveways and roadways. Rooftops will discharge intercepted water into cisterns. Covering 30% of the property with impervious surfaces will increase stormwater runoff and reduce groundwater recharge. SEA recommends that the developer utilize

geoblock® Porous Pavement System or other semi-pervious surface for roads, drives and parking areas in order to increase groundwater recharge and decrease storm water runoff to the extent feasible.

Fresh water ponds in the arid east end of St. Croix provide storm water mitigation, a ready source of water for fighting fires, and an important refuge for indigenous birds during periods of drought. One of these ponds exists on the southeast section of the property. It is particularly important that any alterations in surface water hydrology resulting from earth changes, building and road construction and groundwater appropriation not impact the quantity or quality of freshwater in this pond. SEA recommends that impacts on the surface water of this pond must be addressed before issuance of a water appropriation permit.

The developer proposes to require installation of Aquaklear® mini-wastewater treatment plants at each house with use of household grey water for landscape irrigation. The developer has not indicated how the grey water would be distributed back onto the land (leach field, drip irrigation, garden hose?) This information is necessary for assessment of grey water discharge contributions to groundwater recharge.

Southgate Crossing has requested a water appropriation permit for 30,000 gpd from two wells that they have already drilled on their site. Southgate Crossings indicates that the purpose of the water is to allow residents of the community to fill cisterns with local groundwater rather than having to buy from off-site when their cisterns go dry. Ms. Kema Merrick provided SEA with limited test results showing water samples to be positive for fecal coliform bacteria in the well located on the eight acres sold to Kevin Brandt and positive for total coliform bacteria in one of the wells on the Southgate Crossing property. She did not provide salinity or Total Dissolved Solids (TDS) data for the wells. According to statements of neighbors at the July 29, 2008 public meeting, the well water in the Southgate Watershed is brackish, not potable and will require treatment before being used to fill swimming pools or cisterns. Is the water in the Southgate Crossing wells brackish?

Mr. Frederick Hung, Seven Seas Water Corporation (personal communication) indicates that Seven Seas currently pump up to 60,000 gpd from their Southgate Watershed wells. Salinity of the water ranges from 5ppt to 10ppt in wet and dry periods, respectively. Seven Seas' Reverse Osmosis (RO) plant extracts salts yielding approx. 50% potable water and 50% brine with salinity twice that of the feed water. If the Southgate Crossing well water requires RO treatment, we need to know what accommodations are proposed for disposal of the brine. SEA recommends that the issues of water treatment and disposal of wastewater must be addressed before issuance of a water appropriation permit.

According to Frederick Hung, Seven Seas Corp. has requested permission to increase their groundwater appropriation from their current 60,000 gpd to 150,000 gpd. These two requests need to be considered together. If Southgate Crossing is granted a permit, draw from their wells may further increase salinity in Seven Seas wells. Or not. A USGS survey of St. Croix aquifers (Whetten, 1966) identifies two aquifers in the Southgate area – the Coastal Embayment Aquifer and the larger Volcaniclastic Aquifer. Miles Beamguard, Ph.D., N.P. (personal communication) believes that Seven Seas itself maybe may be pumping from two different aquifers based on the TDS differences from their west and east wells. Mr. Hung reported salinity ranges from 5 ppt to 10 ppt in the feed water to Seven Seas' wells. Dr. Arthur Gaines reported these wells to range from 3 ppt to 6 ppt in 2004 (personal communication). With Seven Seas experiencing increased salinities over just the last few years, it is clear that either or both requested water appropriations may further exacerbate salt water intrusion, impacting water quality in wells of other landholders drawing from the same groundwater reserves. SEA recommends that DPNR proceed very conservatively on permitting any additional appropriation until the water budgets of the Southgate Watershed and underlying aquifers are better understood.

According to Rick Willis, the eight acres SW of the East End Road x Southgate – Great Pond Road is planned for a future commercial development. They already have a drilled well in that eight acres, but we

do not know what demand they may request from the groundwater, nor do we know what other developments may be planned in the future within the Southgate Watershed. I wish to put SEA on the record against a first-come-first-served policy for water rights. A Department responsible for "Planning" and "Natural Resources" should be planning for future demand on our natural groundwater resources.

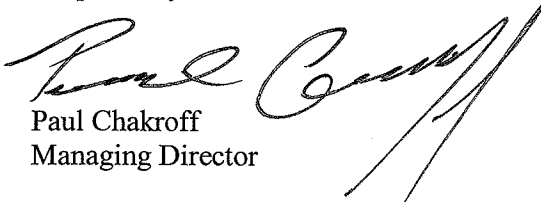
According to Syed Syedali, approximately 3% of the rainfall on St. Croix contributes groundwater recharge (personal communication). According to the US Geological Survey (Jordan 1975), only about one to six percent of annual rainfall may reach the water table and recharge the aquifers. Taking the most generous of these calculations (6%), each acre in the Southgate Watershed, having an average annual rainfall of 30 inches, contributes less than 135 gpd to groundwater recharge.

At the July 29 public meeting, Mr. Willis asked SEA to recommend an acceptable number of gallons per day appropriation. Based upon the 135 gpd/acre contribution to the groundwater from each of Southgate Crossing's 57 acres, SEA recommends that the water appropriation be permitted for not more than 7,700 gpd. Remaining well capacity will be available for fire suppression. Should Southgate Crossing want to pump more than 7,700 gpd in the future, they should purchase, barter for or otherwise obtain water rights from other landholders in the Southgate Watershed and/or aquifer catchment. Otherwise Southgate Crossing is either taking from other watershed landholders water rights, or taking from future development potential within the watershed without due compensation.

Based upon the presentation of Mr. Willis at the July 29 public meeting, the development appears not to be dependent upon water appropriation. Even so, a 7,700 gpd appropriation would enable Southgate Crossing to move forward on Phase One of their project as proposed. Additional appropriations for Phases 2, 3 and 4, if needed, would have to be negotiated with neighbors and DPNR at a future time.

Thank you for the opportunity to review and comment on this request for water appropriation in the Southgate Watershed. As owner and manager of a salt pond and nature preserve in the Southgate Watershed, SEA has a strong interest in seeing that ground water and surface water reserves are well apportioned and managed, not only to meet present needs, but more importantly, to meet future needs of ourselves and our Southgate Watershed neighbors.

Respectfully,



Paul Chakroff
Managing Director

Cc: Rick Willis, Southgate Development Group, LLC
Fred Hung, Sea Seas Water Corporation

Citations:

Jordan, D.G., 1975, A survey of the water resources of St. Croix, Virgin Islands: U.S. Geological Survey Open-File Report 73-137, p. 43, cited in Veve & Taggart, 1996

Olcott, Perry G., 1999, GROUND WATER ATLAS of the UNITED STATES, Puerto Rico and the U. S. Virgin Islands, U.S. Geological Survey HA 730-N (http://pubs.usgs.gov/ha/ha730/ch_n/index.html)

Veve, Thalia D. and Taggart, Bruce E., 1996, Atlas of Ground-Water Resources in Puerto Rico and the U.S. Virgin Islands, USGS Water-Resources Investigations Report 94-4198)

Whetten, J.T., 1966, Geology of St. Croix, U.S. Virgin Islands: Geological Society of America Memoir 98, p. 179-238, cited in Olcott, 1999)