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Office of Audit and Control
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To: Hon. Michael O'Brien, Chair, General Services, Health, and Environment Committee

From: Leif Engstrom, Chief City Auditor

Date: July 27, 2010

Re: June 24 Committee Meeting Summary

At your committee's request, I attended its June 24, 2010 meeting also attended by representatives of UAlbany and DASNY. The meeting followed up on my office's review of the UAlbany FGEIS with particular interest in the sewer and stormwater issues associated with the new dormitory project. The following are my office's assessments of the positives and negatives associated with the different options for the new dormitory's sanitary sewers. There is also a summary of the proposed stormwater infrastructure for the dormitory as well as the other projects covered by the FGEIS.

UAlbany has indicated that they plan to provide comments on this summary. I will forward those comments to you when they are received.

Option 1. Connection of sanitary sewers to the City of Albany sewer system at Western Avenue.

Positive

- **No New Pump Station, Lower Energy Usage, and no Pump Replacement-** This is the only option that allows UAlbany to avoid building a pump station.
    - Pump stations use energy and require maintenance and eventual replacement, all of which are expensive and have negative environmental impacts.
- **Ample Dry-Weather System Capacity-** In dry weather, there is ample capacity in the Woodville Pump Station sewer system to accept the additional flow from the dormitory.
- **Inflow and Infiltration Mitigation-** As a condition of connecting at this location, UAlbany is planning to pay for the removal of some stormwater inflow and infiltration (I/I) from Albany's sewer system.
    - UAlbany has committed to removing I/I volumes of at least twice the dormitory's peak sanitary flow. The monetary savings to the Water Board are unknown, but addressing I/I is expensive.

    - Albany Water Board will have to address I/I issues in this sewer system. Additionally, this watershed and sewershed gaining importance so the issues are becoming more pressing.
    - Assuming that the I/I being removed is prevented from entering the sewers elsewhere, this action should reduce the frequency and volume of overflows at the Woodville Pump Station.
- **Sewer Fees-** Additional water and sewer fees generated by the new dormitory would go to the Albany Water Board.
    - Since UAlbany is planning to use a large number of the beds at the new dormitory to free-up space to accelerate its campus-wide dormitory rehabilitation program, the new dormitory should not add significantly to the Uptown Campus's monthly water/sewer usage fee, which was approximately $275,000 in April.
    - To provide an idea of scale for a dormitory water/sewer bill, Sayles Hall, a dorm on Alumni Quad, pays water/sewer bills of $2,000 to $3,000 three times per year while Pierce Hall pays $1,000 to $2,000. (Alumni Quad at Partridge St. and Western Ave. pays the residential rate as a smaller volume user while the Uptown Campus pays the higher Tier 2 rate.)

Negative

- **Krumkill Creek Water Quality Issues-** The connection will send additional sanitary sewage to the Woodville Pump Station, which overflows into the Krumkill Creek during some storm events. The Krumkill Creek has been determined to be an impaired or impacted waterbody in many different ways:
    - It was moved up to Part 1 of DEC's 303(d) List of Impaired Waters, which could result in the imposition of stricter water quality regulations (TMDL) for the watershed. (Meaning that UAlbany, Albany City, Guilderland, and Bethlehem could be instructed by DEC to make specific - and costly - changes to how they deal with stormwater and point sources of pollution in the area that drains to the Krumkill Creek.)
    - A 2007 study conducted by aquatic biologist Kelley Nolan and funded by DEC found the Krumkill Creek to be impacted by industrial, municipal, and impoundment sources of pollution.
    - The engineers developing the Albany Pool Combined Sewer Overflow (CSO) Long Term Control Plan (LTCP) did tests on the Krumkill Creek in 2009 and found significant concerns with bacterial loading.
    - 2008 CSO LTCP testing found that during storm events, the Normanskill, downstream of the Krumkill Creek, is in violation of water quality standards for fecal coliform bacteria.
- **CSO vs SSO Issues-** The Western Avenue connection would send additional sanitary sewage to the Woodville Pump Station, which is currently a DEC permitted CSO discharge point. The CSO status is currently under review by DEC and it may be determined to be a Sanitary Sewer Overflow (SSO), which DEC cannot permit. The ramifications of an SSO classification would be determined by discussions between the Water Board and DEC.
    - DEC is not permitting any extensions of the Woodville Pump Station sewer system until the CSO-SSO status has been determined.

- **Regulatory Requirements Regarding Sewer Backups-** The 7/3/09 letter from DEC specifies the requirements for connections to and extensions of the City's combined sewer system. Those requirements include prohibiting "*further connections that would make the surcharging/backup problems worse in any other areas of the City that have documented recurrent instances of sewage backing up into houses or discharges of raw sewage onto the ground surface from surcharging manholes.*"
    - There are at least six homes in the Woodville Pump Station sewershed that have participated in the City's Backwater Valve Grant Program, which requires recipients to have "repeated events of combined sewage backup."
        - The valves have been installed on Cambridge Street, Oxford Road, and Carroll Avenue.
    - To date this office is unaware of any engineering determination regarding the impact of this connection on the backup problems within this sewershed.
        - Presumably, the proposed reduction in I/I would reduce the frequency and volume of backups, but it does not address the pollution levels in the sewage when it does back up into houses.
        - **There may be no impact, but that determination needs to be made before connecting at Western Avenue.**
- **Possible Pollutant Loading in Backups and Overflows-** Hershberg&Hershberg made the determination that *"the addition of 136 GPM of household sanitary waste into the Hackett Boulevard Beaver Creek Sewer System to replace I/I flows would result in no detectable increase in BOD*."* However, the concerns regarding the Krumkill Creek watershed and the Woodville Pump Station sewer system do not appear to have been addressed.
    - Sanitary sewage from the new dormitory would flow, untreated, into the Krumkill Creek during storm events.
    - The Western Avenue connection would increase the pollutant concentration at the Woodville Pump Station when it overflows and it may increase the pollutant concentration of sewer backups.
        - **This office is unaware of any engineering determination as to whether the increased concentration at the Woodville Pump Station would be measurable or whether there would be an impact at the sewer backup locations.**
        - If the increase in pollutant concentration at the Woodville Pump Station is measurable, UAlbany would need to demonstrate that their mitigation measures will offset that increase before connecting.

Option 2. Connection of sanitary sewers to the Town of Guilderland sewers at Western Avenue.

Positive

- **Shorter Force Main than for Option 3-** Force-main would be shorter than the force-main to the Patroon Creek Interceptor.
- **No Risk of Sewage Backup Impacts in Albany-** Sewage from the new dormitory would not enter an Albany City sewer system with a history of backups.
- **Adequate Dry-Weather System Capacity-** In dry weather, there is adequate capacity in the Guilderland sewer system to accept the additional flow from the

*BOD is a measure of a type of pollution.

dormitory. There are I/I issues in this sewer system and while there is some capacity in wet weather, I/I mitigation would need to be done.

- **Not tributary to a CSO-** Although there are some I/I issues in this part of Guilderland, Option 2 would send the sewage to the Patroon Creek Interceptor and it would not enter a combined sewer system. The risk of overflows or backups is much lower than in Option 1 though not quite as low as in Option 3.
- **Low Risk of Sewage Discharge to Impaired Waters-** With Option 2, there is little risk of sanitary sewage from the new dormitory being discharged to either the Patroon Creek or the Krumkill Creek, both of which are on Part 1 of the 2010 Final 303(d) Impaired Waters List.
    - This option has slightly more risk than with Option 3, because there is risk of overflow when pumps break down. This option uses two pump stations to deliver the new dormitory's sewage to the same place.

Negative

- **Pump Station/Force Main Construction and Operation-** Requires UAlbany to spend money to construct a pump station and force main.
    - Pump stations use energy, require maintenance and eventually require replacement, all of which are expensive and have negative environmental impacts.
- **Guilderland I/I Mitigation-** There are I/I issues in that section of the Guilderland sewer system and UAlbany would have to pay for mitigation.
- **Higher Sewer Fees-** Guilderland's sewer rates are higher than Albany Water Board's.
- **Two Pump Stations Used-** Sanitary sewage would flow to the Patroon Creek interceptor through two pump stations (UAlbany and Guilderland) instead of the one in Option 3.
- **Sewer Fees to Guilderland-** Usage fees would be paid the Town of Guilderland instead of the Albany Water Board. (Also see fee discussion for Option 1.)
- **No Woodville I/I mitigation-** UAlbany would not pay for I/I mitigation in the Woodville Pump Station sewer system.

Option 3. Connection of sanitary sewers to the UAlbany Northern Interceptor and then to the Patroon Creek Interceptor.

Positive

- **Ample Wet Weather Capacity-** The Patroon Creek Interceptor has ample dry and wet weather capacity and takes sewage directly to the treatment plant.
- **No impact on the Combined Sewer System-** The Patroon Creek Interceptor is not tributary to any CSO discharge points.
- **Very Low Risk of Sewage Discharge to Impaired Waters-** There is almost no risk of sanitary sewage from the new dormitory being discharged to either the Patroon Creek or the Krumkill Creek, both of which are on Part 1 of the 2010 Final 303(d) Impaired Waters List.
- **No Risk of Sewage Backup Impacts-** Sewage from the new dormitory would enter an interceptor without any history of backups.

- **Sewer Fees-** Additional water or sewer fees generated by the new dormitory would go to the Albany Water Board. Please refer to Option 1 for details.
- **Only One Pump Station-** Option 3 only requires the new dormitory's sanitary sewage to pass through one pump station to arrive at the Patroon Creek Interceptor. Option 2 would require it to pass through two pump stations.

Negative

- **Pump Station/Force Main Construction and Operation-** Requires UAlbany to spend money to construct a pump station and force main.
    - Pump stations use energy, require maintenance and eventually require replacement, all of which are expensive and have negative environmental impacts.
- **Longer Force Main-** Option 3 requires UAlbany to spend the money to construct a longer force main than Option 2 while no force main is required for Option 1.
- **No UAlbany Funding for Woodville I/I mitigation-** UAlbany would not pay for I/I mitigation in the Woodville Pump Station sewer system. Please refer to the I/I discussion for Option 1.

Equal Treatment

It is important to respond to the assertions regarding equal treatment with Albany Medical Center (AMC) made in the May 11, 2010 letter from UAlbany. There are significant differences between the two sites' sewer systems and watersheds and the following points need to be considered:

- The Woodville Pump Station sewer system is of a different design and was constructed in a different era than the sewer system at AMC.
- When it overflows, the sewage from AMC is discharged into the Hudson River, which is not in Part 1 of the 303(d) List while sewage flowing to the Woodville Pump Station does flow to an impaired water body.
- DEC has ordered the Water Board to make individual determinations with regard to the impacts of each sewer extension on overflows and backups.
- At the AMC site there is no realistic alternative to connecting to the Combined Sewer System (CSS) while UAlbany's new dormitory project has very realistic alternatives to discharging to the CSS.

Stormwater Issues

The FGEIS document has no specific details in its discussion of stormwater facilities for its many proposed projects. Considering that UAlbany's stormwater flows exclusively to two water bodies listed on Part 1 of the 2010 303(d) Impaired Waters List (the Krumkill and Patroon Creeks), this is an oversight that should be corrected.

The new dormitory's stormwater facilities detailed in the Storm Water Pollution Prevention Plan (SWPPP) that was submitted to NYSDEC included two retention ponds to treat the stormwater before discharging it to the storm sewer system and then to the Krumkill Creek. That proposal would have sent all of the additional runoff generated by the new buildings and parking lots into Krumkill Creek and then into the Normanskill. This was of concern because both creeks have

erosion and flooding issues created by the volume and velocity of runoff during storm events. (This is in addition to the water quality issues outlined above.)

In a very positive development, UAlbany has decided to improve their plans for the new dormitories and have committed to, at a minimum, installing rain gardens and building the parking lots using porous pavement. These are excellent steps in the right direction because both practices allow water to infiltrate into the ground rather than being channeled to the creeks. By keeping more stormwater on site and allowing it to infiltrate into the ground, UAlbany is moving to protect the creeks from further damage.

UAlbany has generally good soils for infiltrating storm water into the ground and has the potential to be an example of sustainable stormwater management. By including green infrastructure in their stormwater plans for the new dormitories, UAlbany is moving in the right direction in protecting the Krumkill and Normanskill Creeks.

In the long-term, UAlbany should examine a system-wide green infrastructure program to address stormwater runoff from all of the construction projects proposed in the FGEIS.

UNIVERSITY AT ALBANY
State University of New York

Office of the Vice President
for Finance & Business

August 5, 2010

Leif Engstrom
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Dear Mr. Engstrom:

Thank you for the opportunity to comment on your July 15, 2010 summary of the June 24, 2010 General Services, Health, and Environment Committee meeting at which the University had presented an overview of its new apartment-style housing project with a focus on the contemplated sanitary connection to the Woodville pump station.

We do not necessarily agree with some of the conclusions reached in your summary; but we appreciate the thoroughness of your analysis and the complete articulation of the issues/concerns discussed at the meeting. As you know, we have worked – and will continue to work – in good faith with the City of Albany and other regional municipalities and entities to implement both sanitary and storm water projects.

On the matter of the sanitary connection, the University has already contacted the Albany Department of Water and Water Supply to indicate that it may pursue an alternate to the Woodville sanitary connection for the housing project.

Regarding storm water management, it is important to note that the University conscientiously follows all applicable laws and regulations and continues to be a responsible and involved member of the community and the Albany Regional Storm Water Coalition. Nonetheless, improvements can always be made in our collective/regional infrastructure. Accordingly, as suggested at the meeting and in your summary, in addition to the already planned vegetated green roof, use of pond water for irrigation, use of high efficiency fixtures, and "green" education and monitoring program, the University will seek to add additional storm water control measures to its housing project, including permeable pavement and a rain garden, and will amend its SWPPP as appropriate.

Thank you once again for providing an opportunity for us to reply.

Sincerely,

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