GOVERNMENT OF THE DISTRICT OF COLUMBIA
OFFICE OF PLANNING

Office of the Director

Memorandum

TO: District of Columbia Zoning Commission

FROM: Andrew Altman, Director
Office of Planning

DATE: November 8, 2004

SUBJECT: Final Report for the Egg-Shaped Digester Facility (ZC #04-19)
District of Columbia Water and Sewer Authority
4500 Overlook Drive, S.W.

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District of Columbia
CASE NO. 04-19
EXHIBIT NO. 21

APPLICATION

The District of Columbia Water and Sewer Authority (WASA) (Applicant) has petitioned the Zoning Commission for approval of a consolidated Planned Unit Development (PUD) in the C-M-3 District to facilitate the construction of its Egg-Shaped Digester Facility. The proposed facility is one-of-a-kind and has engineering requirements that do not conform to some of the zoning regulation. The applicants have therefore requested review under the PUD regulations in order to avail themselves of some of the flexibility allowed by that process. Concurrent with the PUD application, the applicant has requested variance relief from the height requirements. This variance request is necessary because the PUD process does not permit sufficient flexibility to fully accommodate the needed height.

OFFICE OF PLANNING RECOMMENDATION

The Office of Planning (OP) concludes that the proposed digester facility will provide significant financial and environmental benefits to the District of Columbia, and is an important and needed public facility improvement. This unique facility has a creatively designed egg shape intended to minimize its height and bulk and with a visually striking effect. Parts of the large structures have been design to utilize some of the architectural elements of other large structures around the City. The Office of Planning supports WASA's effort to improve the treatment facility, functionally, economically, and visually and recommends **approval** of the consolidated PUD for the project except for the proposed future generation building. OP recommends the future generation building be approved as a first-stage PUD. OP further recommends approval of the variance request for height.

BACKGROUND

The District of Columbia Water and Sewer Authority is an independent authority of the District of Columbia government. WASA provides water distribution and wastewater conveyance and treatment to

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the District of Columbia. Additionally, the facility provides treatment services to Montgomery and Prince George's Counties in Maryland and Fairfax County in Virginia. Since 1966, WASA has made improvements and expanded its facilities to improve its water delivery and wastewater treatment systems. This proposed Egg-Shaped Digester Facility is part of the ongoing improvement plans.

The subject property is owned by the District of Columbia government and was rezoned from the C-M-2 to the C-M-3 district in 1972 to allow the Solids Processing Facility to rise to a height of 90.5-feet (Zoning Commission # 71-11, Order # 56). The application is subject to zoning because 11DCMR, Section 106.5 sets out the applicability of zoning to District-owned properties and Section 106.5 (b) triggers the zoning requirement for this project. It reads in part "*. . . any change or expansion in the use of land or building, or any new construction or additions to buildings shall be subject to zoning.*"

DESCRIPTION OF THE SITE AND SURROUNDING AREA

The subject property is part of the 159-acre Blue Plains Advanced Wastewater Treatment Plant in southwest Washington, D.C. The facility is developed with a number of buildings and facilities that are used in wastewater treatment and processing. The Plant is generally located south of Bolling Air Force Base and the U.S. Naval Research Laboratory; west of the Anacostia Parkway, DC Village, and Oxon Run Park; and east and north of the Potomac River. The uses surrounding the property are generally large public uses well separated from residential areas.

PROPOSAL

As part of its wastewater treatment and processing, WASA proposes to add a biosolids treatment facility to its current operations. This facility will enable WASA to fulfill part of its mission to modernize and improve the efficiency of its operations. The new facility will consist of eight, 145-feet high digesters that are able to contain a volume of 4.5 million gallons each, with a basement area that houses piping, electrical and mechanical equipment, control rooms, storage, and other operations.

On top of each digester is a Gas Dome Structure to support mechanical equipment and provide access to the interior of the digester for maintenance and inspection. The digesters are connected by above ground walkways with four access towers between the digesters to provide access from the ground to the walkways. The walkways are at the 101-foot level. The facility will also include four, 101-feet silos for digested biosolids. Several other support buildings are proposed for the site including a digester control building, that will serve as a welcome area for visitors and assembly space for plant and staff; two, 4,600 square feet electrical equipment buildings; two gas holders to maintain adequate levels of gas pressure in the digesters; up to three waste gas flares; and space for a future power generation facility to utilize the gas generated as a byproduct of the digester process or other building. Service roads to provide access to the new facilities will also be constructed.

The application was filed as a PUD to facilitate a coordinated public review and utilize the flexibility that this process allows given the uniqueness of the facility that does not comply with some of the strict zoning requirements. The flexibility requested is in the areas of height, single lot of record, and yard and setback requirements.

ANALYSIS

The Blue Plains meets the requirements of Sections 2403.3 and 24.3.4 as the facility is generally surrounded by other large public facilities and therefore the impact on residential areas will be minimal. Overall, the impact of the new facility on the surrounding area will be positive, as the new process will reduce emissions and odor and a greater treatment volume with less residue results in a reduction in truck traffic to and from the site. The reduction in operations and maintenance cost which translates in savings to consumers.

As addressed it the *Comprehensive Plan and Public Policies* section of this report, the proposed digester facility and PUD is consistent with the aim of developing a safe and effective methods of processing solid waste.

COMPREHENSIVE PLAN AND PUBLIC POLICIES

In the context of the Comprehensive Plan, Section 2405.5, the Generalized Land Use Map recommends the subject site for local public facilities. There is no conflict with the use of the site for the digester structures and the Comprehensive Plan. The project is also consistent with other sections of the Comprehensive Plan including the following Major Themes of the Comprehensive Plan:

Specifically, the application is consistent with Chapter 4, Environmental Protection Element, of the Comprehensive Plan including:

- ***Section 401, Environmental Protection Goal, which is to "resist threats to its overall quality, to act, to maintain and enhance its positive features in the interest of residents, workers, and visitors, and to protect residential communities from identified environmental hazards by implementing controls that prevent adverse impacts from incompatible uses."***

- ***Section 404, Solid Waste Management, which "is to develop safe and effective methods for reducing, collecting, recycling, and disposing of solid waste and sewage sludge."***

Specifically, the project is consistent with Chapter 6, Public Facilities, of the Comprehensive Plan including

- ***Section 600.3, Declaration of Major Policies, which is to provide for the "expansion of sewerage treatment capacity and construction of related storm water management projects are essential components of the public facilities program for the next two (2) decades. High priority must be given to a solution to the District's solid waste and sludge disposal needs. Regardless of which approach is selected, major capital investments are anticipated."***
- ***Section 601, Public Facilities Goal, which is to "provide adequate and energy-efficient public facilities in good condition to support the cost-effective delivery of municipal programs and services, and to support economic development and neighborhood improvement objectives."***
- ***Section 602, Adequate Service Delivery, which is to "ensure the construction, rehabilitation, and maintenance of facilities essential for public service delivery."***

- ***Section 604, Increased Cost-Effectiveness In Public Facilities, which "is to improve the cost-effectiveness of public facility construction, maintenance, and rehabilitation."***

The proposed egg-shaped digester facility is a major initiative by WASA to improve wastewater treatment. The Biosolids Management Program was developed with local and regional collaboration and focuses on the recycling of biosolids generated at the plant. The new facility will employ state-of-the-art technology that will result in substantial benefits and will include greater treatment capacity, a great reduction in the volume of biosolids produced, a reduction in emissions, a reduction in truck traffic to and from the site, recyclable end products, and significant savings in operations and maintenance, estimated at approximately 16 million dollars.

As afforded by the PUD process, the applicant has requested some flexibility in that due to functional requirements the buildings are unable to meet all the zoning requirements. As shown in the analysis below, the requested flexibility is over and above the benefits the City will achieve

Lot of Record

Section 3202.3 requires that each principal structure be located on a separate lot of record.

> *3202.3* ***Except as provided in § 2516 and § 5 of An Act To amend an Act of Congress approved March 2, 1893, entitled "An Act To provide a permanent system of highways in that part of the District of Columbia lying outside of cities, and for other purposes, approved June 28, 1898 (30 Stat. 519, 520, as amended; D.C. Official Code 5 9-101.05(2001)(formerly codified at D.C. Code § 7-1 14 (1995 Repl.))), a building permit shall not be issued for the proposed erection, construction, or conversion of any principal structure, or for any addition to any principal structure, unless the land for the proposed erection, construction, or conversion has been divided so that each structure will be on a separate lot of record; except buildings and structures related to a fixed right-of-way mass transit system approved by the Council of the District of Columbia. Any combination of commercial occupancies separated in their entirety, erected, or maintained in a single ownership shall be considered as one (1) structure.***

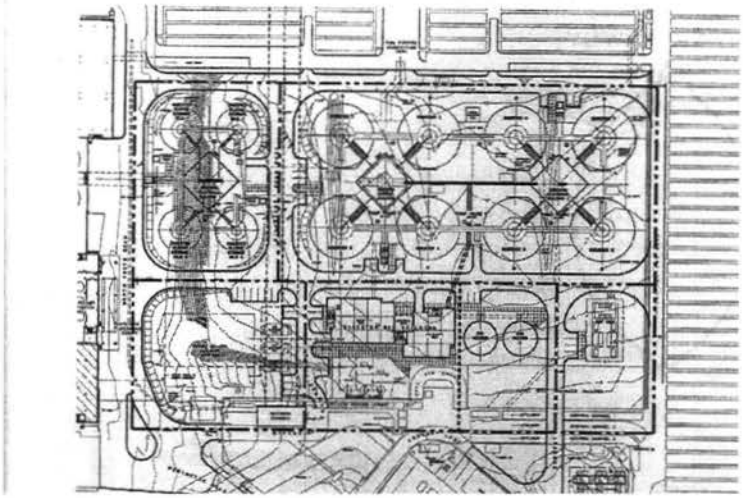
A record lot for the Blue Plains property has never been created and all the structures and various components comprise a single facility. The creation of a record lot requires that the lot have frontage on a public street. The closest public right-of-way is the Anacostia Parkway/I-295, which is located approximately 900-feet from the PUD site. To meet the requirement for a single lot of record with street frontage and building setbacks involves extensive additional relief because of the current development of the site with multiple buildings, facilities and private roads. This process could be very consuming and costly and would not achieve any benefit and therefore impractical.

Setbacks

The applicant is seeking flexibility to create theoretical lots (Figure 1) as allowed by Section 2517 (Exception to Building Lot Control):

Figure 1

EGG SHAPED DIGESTER FACILITY
Washington, DC



Each theoretical lot will have a principal structure meeting the criteria of Sections 2517.2 and 2517.3

> ***2517.2 The number of principal buildings permitted by this section shall not be limited; provided, that the applicant for a permit to build submits satisfactory evidence that all the requirements of this chapter (such as use, height, bulk, and open spaces around each building), as provided by §§ 3202.2 and 3202.3 are met.***

The applicant has designated seven principal buildings within the PUD area. The proposed industrial processing and office uses are matter-of-right uses in the C-M-3 district. Some of the principal and support structures exceed the 90-feet height limit and the applicant has requested variances. The applicant has demonstrated that the excess height will be consistent with the aim of the height requirements.

Although the digesters and some of the support structures exceed the height limit, the bulk of the development on the site is very acceptable. The development has an overall FAR of 0.067, which is much lower than the 6.0 FAR permitted by right.

Because of the unusual nature of the digester facilities and the necessity to be connected in order to function as a unit, open spaces around the structures do not meet all the yard requirements. Generally, open spaces around and between buildings are required to provide light, air and privacy. In this case, the wastewater facility does not require light, air and privacy and that need is overridden by the need of the structures to be connected in order for the system to function. Figure 2 (attached) shows the open space between the structures.

> ***2517.3 If a principal building has no street frontage, as determined by dividing the subdivided lot into theoretical building sites for each principal building:***
>
> ***(a) The front of the building shall be the side upon which the principal entrance is located;***
>
> ***(b) Open space in front of the entrance shall be provided that is equivalent to the required rear yard in the zone district in which the building is located; and***
>
> ***(c) A rear yard shall be required.***

The Zoning Regulations consider structures that are connected above ground to be one structure. In the case of the digesters system and the silos, each set is connected above ground and is therefore a single structure. The rear yard requirement in the CM District is 2.5 inches for each 1-foot of height of the building. The following table is a summary of the following buildings meet that above setback requirement:

Structure	Maximum Height	Required Setback	Setback Provided
Digesters/Digester Electrical Building 2	118 ft.	24.6 ft.	Less than required
Silos/Digester Electrical Building 1	101 ft.	21 ft.	Less than required
Digester Gas Building	52.5 ft.	11 ft.	Complies
Gas Holders	70 ft.	14.6 ft.	Complies
EDF USS	15 ft.	3.1 ft.	Complies
Future Gas Generation Building	90 ft.	18.75 ft	Request waiver

The theoretical lot lines proposed do not in some cases provide the required setbacks. The applicant has requested flexibility from the required front and rear yard setback for the digester structures and the silos. The structures in the digester and silo complexes have spacing requirements and are designed to achieve functional efficiencies in order to work as a unified system. In the case of the digesters, there are underground pipes that connect them and other structures with Blue Plains. Additionally, as stated in the open space discussion above these yard requirements are to provide light, air, and privacy to buildings and clearly are not applicable to this treatment facility. The layout of the buildings and structures are to achieve functional objectives internal to the digester system and their relationship to other buildings on Blue Plains. The setbacks provided around these structures meet these functional requirements and the flexibility requested is reasonable.

Height

The subject property is in the C-M-3 district that allows a height of up to 90-feet. Section 2405.3 only permits the Commission to grant an increase in height of up to 5% or 94.5-feet. The PUD regulations do not provide any additional flexibility and therefore the applicant has submitted, concurrently with the PUD application, variances from the height requirements for the digesters and silos and their accessory structures. OP recommends approval of the height variances and the analysis is presented in a separate but attached report.

Future Power Generation Facility

The digester process produces a gas byproduct that can be used for power generation. The applicant has delineated a site, south of the silos, for such a facility. At this time, the applicant does not have the details of the building and is uncertain if power generation will be the actual use. They are however requesting waivers from the setback requirements for this future structure. There is also no certainty that the proposed building will be below 90-feet. The applicant has requested a blanket approval for a building that has not been designed. The Office of Planning believes that there is too much uncertainty and recommends that when the building has been designed it be submitted for further review.

PUBLIC BENEFITS AND AMENITIES

Section 2403.9 discusses the definition and evaluation of public benefits and amenities.

(a) Urban design, architecture, landscaping, or creation or preservation of open spaces;

The architectural design of the digester facility has met the challenge of architectural superiority. The digester has a unique "egg" shape with cladding panels that are aluminum or steel-colored near the top of the egg and soft yellow as it progresses toward the base, to minimize the appearance of the eggs and reduce their mass. The colors are also consistent with the industrial nature of the facility. The connecting walkways have been designed to emulate cast and wrought iron bridges found around the City. The brick on the other buildings will be similar to other existing buildings at Blue Plains. Landscaping on the site will be minimal due to the nature of the facility and below-grade construction and pipes. Where possible, landscaping will be limited to small flowering trees, shrubs and other vegetation in planters.

(b) Site planning, and efficient and economical land utilization;

The placement of the egg digester facility is internal to the Blue Plains property and placement of structures is based on the functions they perform and the need to be interconnected.

(c) Effective and safe vehicular and pedestrian access; transportation management measures, connections to public transit service, and other measures to mitigate adverse traffic impacts;

The Zoning Regulations require one parking space for each 800 square feet in excess of 2,000 square feet. Based on this requirement 40 spaces are required and are provided with the PUD area. The applicant has stated that they do an anticipate an increase in employees at Blue Plains and most of the current employees have reserved parking spaces on Blue Plains.

(d) Historic preservation of private or public structures, places and parks;

There are no historic structures on the Blue Plains Site

(e) Employment and training opportunities;

The applicant states that they do not anticipate an increase in employees and if there is any increase it will be minimal.

(g) Social services/facilities;

There are no social services related to the project.

(h) Environmental benefits, such as stormwater runoff controls and preservation of open space or trees;

The environment will benefit due to the greater treatment capacity and a reduction in odor emissions. The digesters will provide an additional major environmental benefit due to the reduction in the volume of biosolids from 1,300 wet tons per day to 650 wet tons per day that will also lead to a reduction in truck traffic to the site as a consequence of the reduced volume of biosolids requiring transportation. There will also be a resultant recyclable end product.

(i) Use is of special value to the neighborhood or District of Columbia as a whole; and

The District of Columbia will accrue both financial and environmental benefits from the project, as the digesters provide more efficient operations, generate savings in operations and maintenance of the facility that reduce costs to both the City and retail customers.

OTHER COMMENTS

The applicant continues to work with the Commission of Fine Arts, and the National Capital Planning Commission. The application is supported by ANC 8B.

RECOMMENDATION

The Office of Planning concludes that the proposed digester facility will provide significant financial and environmental benefits to the District of Columbia, and is an important and needed public facility improvement. OP also acknowledges the unique design of the structure. The Office of Planning supports WASA's effort to improve the treatment facility and recommends **approval** of the consolidated PUD except for the proposed future generation building, which OP recommends as a first stage PUD.