LOCAL IMPACT REPORT FOR SANITARY SEWER, STORM SEWER AND WATER SUPPLY

FOR

SANDS BETHWORKS ENTERTAINMENT COMPLEX

City of Bethlehem, Ward 17
Northampton County, Pennsylvania

Tax Map 6, Block 2, Lot 2
Parcel ID: P6 2 2 0204

November 2005

FPA No. 04C155DR1

Prepared for:

LAS VEGAS SANDS CORP.
3355 Las Vegas Boulevard South
Las Vegas, Nevada 89109

Prepared by:

FRENCH & PARRELLO ASSOCIATES, P.A.

Paul A. Couvrette, P.E., C.M.E.
N.J.P.E. License No. 24GE03745700

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1.0 INTRODUCTION

The subject property is known as Block 2, Lot 2, Parcel P6 2 2 0204, in the City of Bethlehem, Ward 17, Northampton County, Pennsylvania. The site is located on a portion of the historic Bethlehem Steel Ore Yard, near the Minsi Trail Bridge and a portion of the Bethlehem Steel site to the west of the bridge. Parcel P6 2 2 0204 consists of approximately 91 acres.

The Las Vegas Sands Corporation intends to construct an entertainment complex which will include a casino, restaurants, commercial recreation facilities, retail use, and 300 hotel rooms. This is a preliminary assessment of the potential impact of the proposed entertainment complex on the City of Bethlehem's water distribution system, storm sewer and sanitary sewer systems. This report is based on an analysis of information made available through the City of Bethlehem, Bethlehem Steel, in-house files and conversations with various city and state officials.

2.0 EXISTING UTILITIES INVENTORY AND EVALUATION

A. Sanitary Sewer

The City of Bethlehem's sewer service area includes all of the City of Bethlehem, the Borough of Fountain Hill, the Borough of Freemansburg, Hanover Township – Northampton County, the Borough of Hellertown and portions of Bethlehem Township, Hanover Township – Lehigh County, Lower Saucon Township, Salisbury Township, and the City of Allentown. The City of Bethlehem owns, operates, and maintains a wastewater collection and conveyance system and a wastewater treatment plant (WWTP). Conveyance facilities include approximately 208 miles of gravity sewer lines and the City maintains 46.3 miles of sewer lines in Hanover Township – Northampton County. The population served by the City's WWTP is more than 115,000 with over 25,000 sewer accounts.

Joseph Mari, Project Engineer, who has been with the City of Bethlehem's Engineering Department for over 42 years, stated in an interview that the City's waste water treatment plant went on line around 1952 and was rated by the Pennsylvania Department of Environmental Protection (PADEP) to process 20 million gallons of sewage per day (MGD). The PADEP later dropped the rating from 20 million to 15.5 million after the Bethlehem Steel Plant stopped production. The steel plant was producing about 5 MGD when it was in full operation.

The proposed entertainment complex project which will include a casino, 300 hotel rooms, restaurants, commercial recreation facilities and retail uses will generate approximately 125,000 gallons per day (GPD) of wastewater. This is significantly less than Bethlehem Steel's 5 MGD for which the systems were designed. French and Parrello Associates, P.A. (FPA) worked in conjunction with Pete Hepler of the City of Bethlehem Engineering Department to calculate the flows. Mr. Hepler stated the City's WWTP has about 400,000 GPD of wastewater treatment capacity reserved for the City of Bethlehem for future allocation as of November 3, 2005. A Sewage Facilities Planning Module Application has been submitted to the City for approval (see Appendix A). The WWTP has the capacity to treat the projected flows from the proposed entertainment complex; therefore the project should have no impact on the City's WWTP.

The City of Bethlehem owns and maintains existing sanitary sewer facilities near the project area. See sanitary sewer maps in Appendix A. A 42" Reinforced Concrete Pipe (RCP) runs through the proposed site near the Minsi Trail Bridge. The 42" pipe connects to a 66" RCP which conveys the waste water by gravity to the WWTP about 1.5 miles from the project site. The close proximity to the plant and the fact that the project site is uphill from the plant would suggest at this time that there is no need of a pump station onsite.

The existing sewer system for the former Bethlehem Steel Plant which connects to the City collection system consists mostly of cast iron pipes. To avoid infiltration and inflow problems and ensure approval from the City, Mr. Mari recommends not incorporating any existing onsite sewer pipe into the design of the new sewer system. Cast iron is not an approved pipe material for the construction of new sanitary sewer systems in the City of Bethlehem. This should not be an issue for the design of the site, since any existing abandoned sewer pipes on the site will be removed.

The proposed entertainment complex will have the option of connecting to the existing 42" or the 66" sewer line. During the process of evaluating and designing the sewer system during site plan preparation, the best connection point can be determined. The nearby 42" and 66" sanitary sewer system have an adequate conveyance capacity and the anticipated flows from the proposed entertainment complex should have no negative impact on the City's sanitary sewer collection infrastructure.

B. Potable Water

The City of Bethlehem water system is owned and operated by the City. The City of Bethlehem's water comes entirely from surface sources, namely the Wild Creek Reservoir, Towamensing Township, Carbon County, in a watershed that covers 22 square miles and the Penn Forest Reservoir, Penn Forest Township, Carbon County and Polk Township, Monroe County, in a watershed that covers 17 square miles. This primary water supply is located 22 miles north of the City.

The Tunkhannock Creek, Tunkhannock Township, Monroe County provides a supplemental supply to the Penn Forest Reservoir. The Bethlehem Authority owns approximately 13,600 acres around the Wild Creek and Penn Forest Reservoirs and approximately 9,000 acres around the Tunkhannock Creek and restricts any activities on these lands that could contaminate these water supplies. There is no public access, such as boating, allowed on these reservoirs. Dual transmission mains can carry up to 47 million gallons of water per day to the City's water filtration plant in Lehigh Township and from there to the distribution system. Appendix B contains a copy of the Will Serve Request letter sent to the City of Bethlehem Engineering Department, for potable water service to the site.

The estimated domestic demand for potable water for the proposed entertainment complex will coincide with the projected sewage flows of 125,000 GPD. The required fire flow calculated by the project architect is about 650 gallons per minute (GPM).

The City of Bethlehem owns the water infrastructure in the project area. A 30" Cast Iron (CI) water main runs through the proposed project site. Copies of the City of Bethlehem's water utility maps K-6 and K-7 are located in Appendix B of this report. Carl Newswanger, Water Utility Engineer, who has been with the City's engineering department for over thirty-five years reported to us in an interview that the 30" water main has a flow rate of 3,000 gallons per minute (GPM) and a residual pressure of 80 pounds per square inch (PSI). He stated the City does not have any flow information on record of the water facilities within the Bethlehem Steel ore pit area, but recalls when they conducted flow tests that the results may not be adequate for fire protection.

The lack of capacity of the existing water system near the Bethlehem Steel ore pit area will not be an issue because this existing water system will be replaced with a new on-site water distribution system that will be connected to the City's 30" main. The connection to the 30" main will be integrated into the design of the final site plans for the entertainment complex.

The location of the existing City 30" main may ultimately conflict with the location of the proposed entertainment complex. This will be resolved by incorporating the relocation of the 30" main with the design of the entertainment complex water distribution system, during site plan design.

The information obtained by FPA to date would indicate that the 30" water transmission line near the proposed entertainment complex should adequately convey the flows needed to support the entertainment complex. The 30" pipes 3000 gallons per minute flow rate, (which equates to 4.3 million gallons per day) should supply the 125,000 GPD domestic demand required by the entertainment complex.

For this reason, the construction of the entertainment complex should have no adverse impact on the City of Bethlehem water distribution system.

C. Storm Sewer

The Pennsylvania Stormwater Management Act 167 was established to meet the requirements of the National Pollutant Discharge Elimination System (NPDES). The state has been divided by watershed and Act 167 was set up to provide improved management of stormwater runoff impacts associated with land development. The purpose of the Act was to encourage planning and management of stormwater runoff and to coordinate stormwater management efforts within each watershed. The Act ensures new problems are not created and existing drainage problems are not exacerbated.

The entertainment complex site is located in the Catasauqua Creek Watershed and Lehigh River Sub-Basin 4. This area is comprised of 6 unnamed creeks and 27 direct drainage sub-areas.

The area is divided into three stormwater management districts consistent with the Catasauqua Creek Release Rate Map in Appendix C. Three types of stormwater management districts may be applicable to the City, namely Conditional No Detention I Districts, Conditional No Detention II Districts and Dual Release Rate Districts.

A land development project within the Conditional No Detention I Districts areas may discharge stormwater runoff without detention facilities. No aboveground or belowground detention basins are required if the local storm sewer conveyance facilities have adequate capacity for the runoff of the proposed site.

In the Conditional No Detention II Districts, adequate capacity must be demonstrated by calculating the capacity of the receiving waters. The available capacity will determine if no detention or a 100% release rate will be required for the site.

In the dual release rate districts the 2-year post-development stormwater runoff must be controlled to 30% of the pre-development 2-year runoff peak. The 10-year, 25-year and 100-year post-development stormwater runoff must be controlled to 100% of the pre-development peak. Some type of detention will be required.

The design of proposed storm sewer for the casino will not require the use of a detention basin since the site falls in the Conditional No Detention District I. The new storm sewer system can be connected directly to the City's existing storm sewer system. The runoff controls used in the design will be based upon site characteristics such as topography, soils, geology, water table, etc. Water Quality Measures will also be required by the local Soil Conservation District. Based on the above characteristics the following Best Management Practice's (BMP's) will be integrated into the design of the storm sewer system for water quality; where appropriate:

- Infiltration Trench and Dry Well
- Grass Swale
- Water Quality Inlet
- Infiltration Chamber

The most favorable connection point to the existing storm sewer system will be determined as part of the design layout and analysis.

The former Bethlehem Steel site has storm sewer facilities in the project area (see Storm Drainage Maps in Appendix C). A 42" storm sewer runs along the southern property boundary near Daly Avenue. The 42" stormwater conveyance system enlarges to a 72" pipe and discharges into the Lehigh River from a 78" outfall.

From reviewing the storm drainage map, a possible connection point to the City storm sewer would be somewhere along the 72" pipe. The 72" pipe has a large conveyance capacity and it is likely that the entertainment complex drainage system could be designed to tie into this existing 72" pipe, therefore, not burdening the surrounding existing City stormwater collection system.

The proposed entertainment complex site is in close proximity of the Lehigh River. The runoff from the proposed site will most likely be discharged into the existing 72" storm sewer located on the site and, therefore, will have no impact on the City's storm sewer infrastructure.

3.0 CONCLUSION

Based on our analysis of record information made available through the City of Bethlehem, Bethlehem Steel, in-house files and conversations with various officials at the City and State level, we have concluded that the City wastewater treatment plant presently has the capacity to serve the proposed entertainment complex site. The City of Bethlehem's waste water treatment plant has approximately 400,000 gallons per day of capacity available. The proposed Phase I Development of the entertainment complex will require approximately 125,000 gallons per day. For this reason, the construction of the proposed entertainment complex should have no negative impact on the treatment plant. The necessary paperwork to reserve the capacity in the treatment plant for the entertainment complex has been filed with the City.

The proposed entertainment complex site, at the former Bethlehem Steel ore pit area, is in close proximity to the City's 66" sanitary sewer trunk line, which runs along the Lehigh River. A 42" line also runs through the ore pit area, and connects to the 66" trunk line. A portion of the former Bethlehem Steel site was connected to this sanitary sewer collection system, when it was in operation. According to the City, the former Bethlehem Steel site produced 5 million gallons per day of wastewater flows, which were conveyed to the City wastewater treatment plant through the collection system. Since the proposed entertainment complex is estimated to produce approximately 125,000 gallons per day of wastewater flows, the existing collection system should have the capacity to convey the projected wastewater flows from the entertainment complex. For this reason the construction of the entertainment complex will have no adverse impact on the City of Bethlehem sanitary sewer collection system.

The City of Bethlehem owns and operates the water transmission system at the proposed casino site. A 30" line runs through the property roughly parallel to the Minsi Trail Bridge. According to our research, this line should have adequate capacity to deliver the required domestic and fire flows to the site. The 30" line may have to be relocated as part of the construction of the entertainment complex, but this can be accomplished without interrupting service to the surrounding areas. For these reasons, the construction of the entertainment complex will have no negative impact on the City's water system.

The proposed entertainment complex site will not adversely impact the City's storm drain system. The reason for this conclusion is that the site lies adjacent to the Lehigh River, and existing stormwater outfalls to the river will be incorporated into the site design, when possible. It is anticipated that a new storm drain system will be used to collect stormwater on site, and that a minimum, if any, stormwater will be directed to the existing municipal storm drain system.

In summary, the findings of French and Parrello have indicated that the construction of the proposed entertainment complex will have no significant adverse impacts on the local stormwater, water distribution, or sanitary sewer system.

J-6

K-5

K-7

L-6

E 2656,000
N480,000

E 2664,000
N480,000

N475,000
E2,656,000

N475,000
E2,664,000

COMPILED 1958
REVISED TO
JULY 1963

BOUNDARIES
- CITY BOUNDARY
- COUNTY BOUNDARY
- TOWNSHIP BOUNDARY

SOURCE
PLAT RECORDS OF THE CITY OF BETHLEHEM, NORTHAMPTON CO. AND LEHIGH CO.
SANBORN MAPS SUPPLEMENTED BY FIELD SURVEY BY SANBORN MAP CO.

BETHLEHEM, PENNSYLVANIA
CITY PLANNING COMMISSION
SCALE 200 FT. TO ONE INCH
200 0 200 400 600

SANBORN
SEWER BASE MAP
K-6

ORIGINAL COMPILED AND DRAFTED BY
SANBORN MAP CO.- PELHAM, N.Y.

J-7

E 2,665,000
N 480,000

E 2,672,000
N 480,000

BETHLEHEM DR.

WIN DR.

KOSSUTH STREET

MONROE STREET

ROOSEVELT STREET

McKINLEY STREET

CLEVELAND STREET

GARFIELD STREET

SOMERSET STREET

CLEARFIELD STREET

JUNIATA STREET

CAMBRIA STREET

CITY OF BETHLEHEM
BORO OF FREEMANSBURG

LINCOLN STREET

GARIBALD ST.

OAK CT.

ROCKLAND ST.

BETHLEHEM PIKE

GREEN ROAD

MARKET ST.

WILLOW ST.

MAIN ST.

JACKSON ST.

CARPENTER ST.

JEFFERSON ST.

STREET

DRIVE

LOWER SAUCON TWP
CITY OF BETHLEHEM

CHARLES ST.

IVYWOOD AVE.

WOODLAWN ST.

SAUCON AVE.

E. NORTH ST.

BRYAN ST.

JENNINGS ST.

E. BROAD ST.

E. MARKET ST.

BORO OF FREEMANSBURG
CITY OF BETHLEHEM

LEHIGH RIVER

L.C. & N. CO.

L.V. R.R.

ABANDONED CANAL

RIVERSIDE DRIVE

SHIMERSVILLE RD.

SAUCON CREEK

APPLEBUTTER RD.

EASTON RD.

DEXTER AVE.

HECTOR ST.

CABOT ST.

EAST BRANCH SAUCON CREEK

DALY AVE.

E. 3RD ST.

Roaring Run

N475,000
E2,664,000

N475,
E2,672,000

K-6

K-7

L-7

COMPILED 1958
REVISED TO
JAN 1, 1963

BOUNDARIES
CITY BOUNDARY
COUNTY BOUNDARY
TOWNSHIP BOUNDARY

SOURCE
PLAT RECORDS OF THE
CITY OF BETHLEHEM, NORTHAMPTON CO.
AND LEHIGH CO.
SANBORN MAPS SUPPLEMENTED BY
FIELD SURVEY BY SANBORN MAP CO.

BETHLEHEM, PENNSYLVANIA
CITY PLANNING COMMISSION
SCALE 200 FT. TO ONE INCH.
200 0 200 400 600

SANITARY
BASE M
K-7

ORIGINAL COMPILED AND DRAFTED BY
SANBORN MAP CO.- PELHAM, N.Y.

PROJECTED SEWAGE FLOWS						
Hotels	300	Units	@ 100 GPD	=	30,000	GPD
Restaurants	950	Seats	@ 12 GPD	=	11,400	GPD
Casino	5,000	Slot machines	@ 12 GPD	=	60,000	GPD
Multiplex Cinema	1,700	Seats	@ 5 GPD	=	8,500	GPD
Multipurpose Facility	1,500	Seats	@ 5 GPD	=	7,500	GPD
Retail Space	172,700	SF	@ 45 GPD/1,000 SF	=	7,772	GPD
Office Space	8	Employees	@ 10 GPD	=	80	GPD
			TOTAL	**=**	**125,252**	**GPD**

PROJECTED BIOLOGICAL OXYGEN DEMAND (BOD)						
Hotels	300	Units	@ 0.30	=	90	BOD/day
Restaurants	950	Seats	@ 0.08	=	76	BOD/day
Casino	5,000	Slot machines	@ 0.08	=	400	BOD/day
Multiplex/Cinema	1,700	Seats	@ 0.03	=	51	BOD/day
Multipurpose Facility	1,500	Seats	@ 0.03	=	45	BOD/day
Retail Space	172.7	SF	@ 0.02	=	3.5	BOD/day
Office Space	8	Employees	@ 0.06	=	0.48	BOD/day
			TOTAL	**=**	**665.98**	**BOD/day**

§ 73.17. Sewage flows.

(a) The flow figures in this subsection and subsection (b) are peak daily flows for the design of community onlot sewage systems. These flow figures are not intended to be used for the calculation of flows for the design of community sewerage systems or for the allocation of flows related to community sewerage systems. Design and permit sewage flows for a community sewerage system are to be calculated using the procedures established in the Department's ''Domestic Wastewater Facilities Manual.'' The sewage flow from single family dwellings served by a community onlot sewage system or from apartments, rooming houses, hotels and motels served byan individual or community sewage system shall be determined from the following table:

Type of Establishment	*Gallons/Unit/day*	
Residential	*Gallons/unit*	*BOD/unit*
Hotels and motels	100	.30
Multiple family dwellings and apartments, including townhouses, duplexes and condominiums	400	1.13
Rooming houses (per unit)	200	.60
Single family residences	400*	.90

*For units of 3 bedrooms or less; for each bedroom over 3, add 100 gallons.

(b) The sewage flow, which shall exclude any industrial waste, for nonresidential establishments served by an individual or community sewage system shall be determined from the following table:

Type of Establishment		
Commercial	*Gallons/day*	*BOD/day*
Airline catering (per meal served)	3	.03
Airports (per passenger—not including food)	5	.02
Airports (per employe)	10	.06
One licensed operator Beauty shops	200	—
Bus service areas not including food (per patron and employe)	5	.02
Country clubs not including food (per patron and employe)	30	.02
Drive-in theaters (not including food—per space)	10	.06
Factories and plants exclusive of industrial wastes (per employe)	35	.08
Laundries, self-service (gallons/washer)	400	2.00
Mobile home parks, independent (per space)	400	1.00
Movie theaters (not including food, per auditorium seat)	5	.03
Offices (per employe)	10	.06
Restaurants (toilet and kitchen wastes per patron)	10	.06
(Additional for bars and cocktail lounges)	2	.02
Restaurants (kitchen and toilet wastes, single-service utensils/person)	8.5	.03
Restaurants (kitchen waste only, single-service utensils/patron)	3	.01
Stores (per public toilet)	400	2.00
Warehouses (per employe)	35	—
Work or construction camps (semipermanent) with flush toilets (per employe)	50	.17

Work or construction camps (semipermanent) without flush toilets (per employe)	35	.02
Institutional		
Churches (per seat)	3	—
Churches (additional kitchen waste per meal served)	3	—

Type of Establishment		
Institutional	*Gallons/day*	*BOD/day*
Churches (additional with paper service per meal served)	1.5	—
Hospitals (per bed space, with laundry)	300	.20
Hospitals (per bed space, without laundry)	220	—
Institutional food service (per meal)	20	—
Institutions other than hospitals (per bed space)	125	.17
Schools, boarding (per resident)	100	.17
Schools, day (without cafeterias, gyms or showers per student and employe)	15	.04
Schools, day (with cafeterias, but no gym or showers per student and employe)	20	.08
Schools, day (with cafeterias, gym and showers per student and employe)	25	.10
Recreational and Seasonal		
Camps, day (no meals served)	10	.12
Camps, hunting and summer residential (night and day) with limited plumbing including water-carried toilet wastes (per person)	50	.12
Campgrounds, with individual sewer and water hookup (per space)	100	.50
Campgrounds with water hookup only and/or central comfort station which includes water-carried toilet wastes (per space)	50	.50
Fairgrounds and parks, picnic—with bathhouses, showers, and flush toilets (per person)	15	.06
Fairgrounds and parks, picnic (toilet wastes only, per person)	5	.06
Swimming pools and bathhouses (per person)	10	.06

(c) Actual water meter or sewer meter flow data indicating peak daily flows different than those shown in this section over a 1-year period for a similar nonresidential establishment may be accepted for use in sizing the onlot disposal system. If average daily flows are used, the peak daily flow shall be calculated by multiplying the average daily flow by two.

(d) Establishments with food preparation facilities are required to install adequately designed pretreatment units and traps to reduce greases and biological oxygen demand (BOD) prior to discharge to an individual or community sewage system.

Authority

The provisions of this § 73.17 amended under section 9 of the Pennsylvania Sewage Facilities Act (35 P. S. § 750.9); The Clean Streams Law (35 P. S. § § 691.1—691.1001); and section 1920-A of The Administrative Code of 1929 (71 P. S. § 510-20).

Source

The provisions of this § 73.17 adopted January 21, 1983, effective January 22, 1983, 13 Pa.B. 508; amended November 7, 1997, effective November 8, 1997, 27 Pa.B. 5877. Immediately preceding text appears at serial pages (217318) to (217320).

Cross References

This section cited in 25 Pa. Code § 71.52 (relating to content requirements—new land development revisions); 25 Pa. Code § 72.22 (relating to permit issuance); 25 Pa. Code § 73.16 (relating to absorption area requirement); 25 Pa. Code § 73.31 (relating to standards for septic tanks); 25 Pa. Code § 73.32 (relating to standards for aerobic treatment tanks); and 25 Pa. Code § 73.161 (relating to general).

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1. **Development Information**

Name of Development Sands BethWorks
Developer Name Las Vegas Sands Corporation
Address 3355 Las Vegas Boulevard South
Las Vegas, Nevada 89109
Telephone # _____

2. **Location of Development**

a. County Northampton
b. Municipality City of Bethlehem
c. Address or Coordinates N 40 36' 53.7" W 75 21' 30.2"
_____
_____

d. USGS Quad Name Hellertown
inches up 8 over 9
from bottom right corner of map.

3. **Type of Development Proposed**

(check appropriate box)

☐ Residential ☐ Multi-Residential

Describe _____

☒ Commercial ☐ Institutional

Describe Casino/Hotel with restaurants and retail

☐ Brownfield Site Redevelopment

☐ Other (specify) _____

4. **Size**

a. # of lots 1 # of EDUs 313
b. # of lots since 5/15/72 _____
c. Development Acreage 91 +/- Ac.
d. Remaining Acreage _____

5. **Sewage Flows** 125,252 gpd

6. **Proposed Sewage Disposal Method**

(check appropriate boxes)

a. ☒ Sewerage System
☐ Existing (connection only) ☐ New (extension)
☒ Public ☐ Private
☐ Pump Station(s)/Force Main ☐ Gravity

Name of existing system being extended

City of Bethlehem

Interceptor Name South Side Trunk Line

Treatment Facility Name City of Bethlehem

b. ☐ Construction of Treatment Facility
☐ With Stream Discharge
☐ With Land Application (not including IRSIS)
☐ Other
☐ Repair?

Name of waterbody where point of discharge is proposed (if stream discharge)

c. ☐ Onlot Sewage Disposal Systems
(check appropriate box)
☐ Individual onlot system(s) (including IRSIS)
☐ Community onlot system
☐ Large-Volume onlot system

d. ☐ Retaining tanks

Number of Holding Tanks _____
Number of Privies _____

7. ☐ **Request Sewage Facilities Planning Module forms in electronic format**

8. **Request for Planning Exemption**

a. Protection of rare, endangered or threatened species

Check one:

☐ The "PNDI Project Environmental Review Receipt" is attached.

or

☒ A completed "PNDI Project Planning & Environmental Review Form," (PNDI Form) is attached. I request DEP staff to complete the required PNDI search for my project. I realize that my planning exemption will be considered incomplete and that the DEP processing of my planning exemption request will be delayed, until a "PNDI Project Environmental Review Receipt" and all supporting documentation from jurisdictional agencies (when necessary) is/are received by DEP.

Applicant or Consultant Initials_____

b. ☐ Plot Plan Attached

c. Onlot Disposal Systems

(1) I certify that the Official Plan shows this area as an onlot service area.

_____ /_____
(Signature of Municipal Official) Date

_____ /_____
Name (Print) Title

_____
Municipality (must be same as in 2.b.)

Telephone # _____

(2) I certify that each lot in this subdivision has been tested and is suitable for both a primary and replacement sewage disposal system.

_____ /_____
(Signature of SEO) Date

_____ /_____
Name (Print) Certification #

Telephone # _____

(3) I certify that each lot in this subdivision is at least 1 acre in size

_____ /_____
(Signature of Project Applicant/Agent) Date

d. Public Sewerage Service (i.e., ownership by municipality or authority)

Based upon written documentation, I certify that the facilities proposed for use have capacity and that no overload exists or is projected within 5 years. (Attach documents.)

_____ /_____
(Signature of Municipal Official) Date

_____ /_____
Name (Print) Title

_____
Municipality (must be same as in 2.b.)

Telephone # _____

J-6

K-5

K-7

L-6

REVISIONS:

WATER UTILITY MAP
CITY OF BETHLEHEM
BETHLEHEM PENNSYLVANIA

SCALE: 200 FT. TO ONE INCH

200 0 200 400 600

NORTH

K-6

REVISIONS:

WATER UTILITY MAP
CITY OF BETHLEHEM
BETHLEHEM PENNSYLVANIA

SCALE: 200 FT. TO ONE INCH

NORTH

K-7

L-7

K-6

K-8

J-7

FRENCH & PARRELLO
ASSOCIATES, P.A., CONSULTING ENGINEERS

VIA OVERNIGHT MAIL

November 23, 2005

Mr. Carl F. Newswanger, Water Utility Engineer
CITY OF BETHLEHEM DEPARTMENT OF WATER AND SEWER
10 East Church Street
Bethlehem, Pennsylvania 18018

Re: **Will Serve Letter for Potable Water Services**
BethWorks Casino
Tax Map P6, Block 2, Lot 2
City of Bethlehem, Northampton County, Pennsylvania
FPA No. 04C155DC1

Dear Mr. Newswanger:

Please be advised that French & Parrello Associates, P.A. has been retained by the Las Vegas Sands Corporation to conduct a preliminary impact analysis for the construction of a proposed casino facility on the above site. The average daily projected sewage flows for the current plan are approximately 126,500 GPD. We are presently making the assumption that the average daily domestic water demand would also be 126,500 GPD. The required fire flow as estimated by the Architect is 650 GPM.

By this letter, we request confirmation from your department that you can meet the projected water demands of this project.

If at all possible, please expedite your review of the documents and information provided, as we are ready to proceed on this project.

If you have any questions or require additional information, please feel free to contact us.

Very truly yours,

FRENCH & PARRELLO ASSOCIATES, P.A.

Mark L. Reid /nja

Mark L. Reid
Project Engineer
Mark.Reid@fpaengineers.com

MLR/nja

CITY OF BETHLEHEM

Department of Water & Sewer Resources

10 East Church Street, Bethlehem, Pennsylvania 18018-6025

www.bethlehem-pa.gov
Phone: (610) 865-7207
Fax: (610) 865-7331

November 29, 2005

Mark L. Reid, Project Engineer
French & Parrello Associates, P.A.
254-B Mountain Avenue, Suite 301
Hackettstown, NJ 07840

Re: Beth Works Casino

Dear Mark:

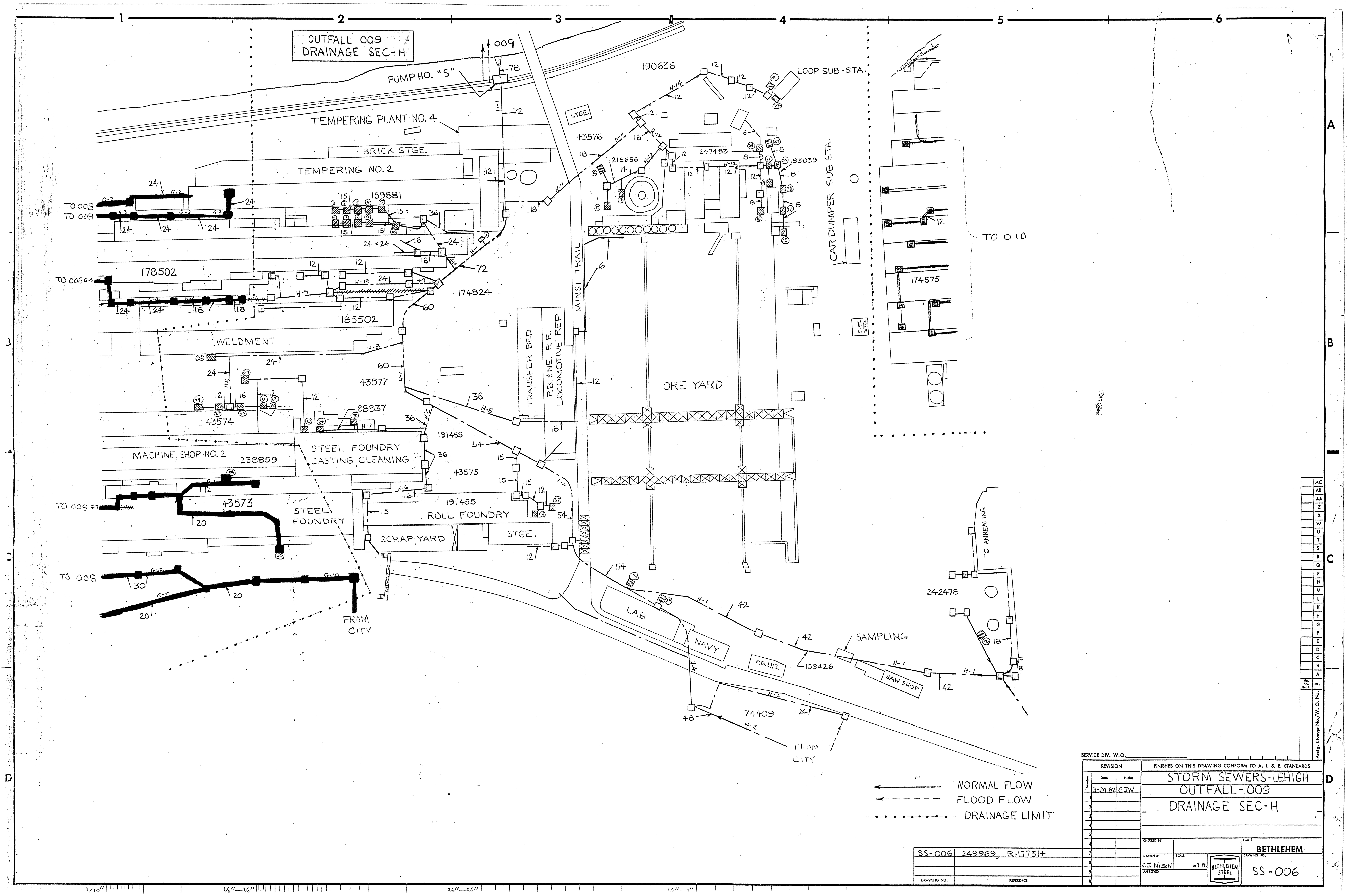
In reply to your letter of November 23, 2005, City water service is available to the above-referenced project, subject to all rules, regulations and requirements of the City of Bethlehem. Since any water feeds to the new casino area will come from the existing 30" transmission main, the requirements of 126,500 GPD domestic demand and 650 GPM fire flow will be no problem whatsoever.

If there are any questions, please call me at 610-865-7076.

Yours Respectfully,

Carl F. Newswanger
Water Utility Engineer

CC: M. Alkhal, P.E.
D.L. Brong
S. W. DeSalva, P.E. (via E-Mail)
A. B. Rohrbach (Same)
File



OUTFALL 009
DRAINAGE SEC-H
PUMP HO. "S"
009
TEMPERING PLANT NO. 4
BRICK STGE.
TEMPERING NO. 2
159881
178502
185502
WELDMENT
43577
43574
188837
MACHINE SHOP NO. 2
238859
STEEL FOUNDRY
CASTING CLEANING
191455
43575
43573
STEEL
FOUNDRY
ROLL FOUNDRY
SCRAP YARD
STGE.
TO 008
FROM
CITY
174824
TRANSFER BED
P.B. & NE. R.R.
LOCOMOTIVE REP.
MINSI TRAIL
43576
215656
247483
193039
190636
LOOP SUB-STA.
CAR DUMPER SUB STA.
ELEC STO.
ORE YARD
174575
TO 010
6 ANNEALING
242478
LAB
NAVY
P.B. & NE
SAMPLING
SAW SHOP
109426
74409
NORMAL FLOW
FLOOD FLOW
DRAINAGE LIMIT
SS-006 249969, R-17731+
DRAWING NO.
REFERENCE
SERVICE DIV. W.O.
REVISION
FINISHES ON THIS DRAWING CONFORM TO A. I. S. E. STANDARDS
STORM SEWERS-LEHIGH
OUTFALL-009
DRAINAGE SEC-H
3-24-82 CJW
DRAWN BY C.J. WILSON
SCALE -1 ft.
BETHLEHEM STEEL
PLANT BETHLEHEM
DRAWING NO. SS-006
Acctg. Charge No./W. O. No.

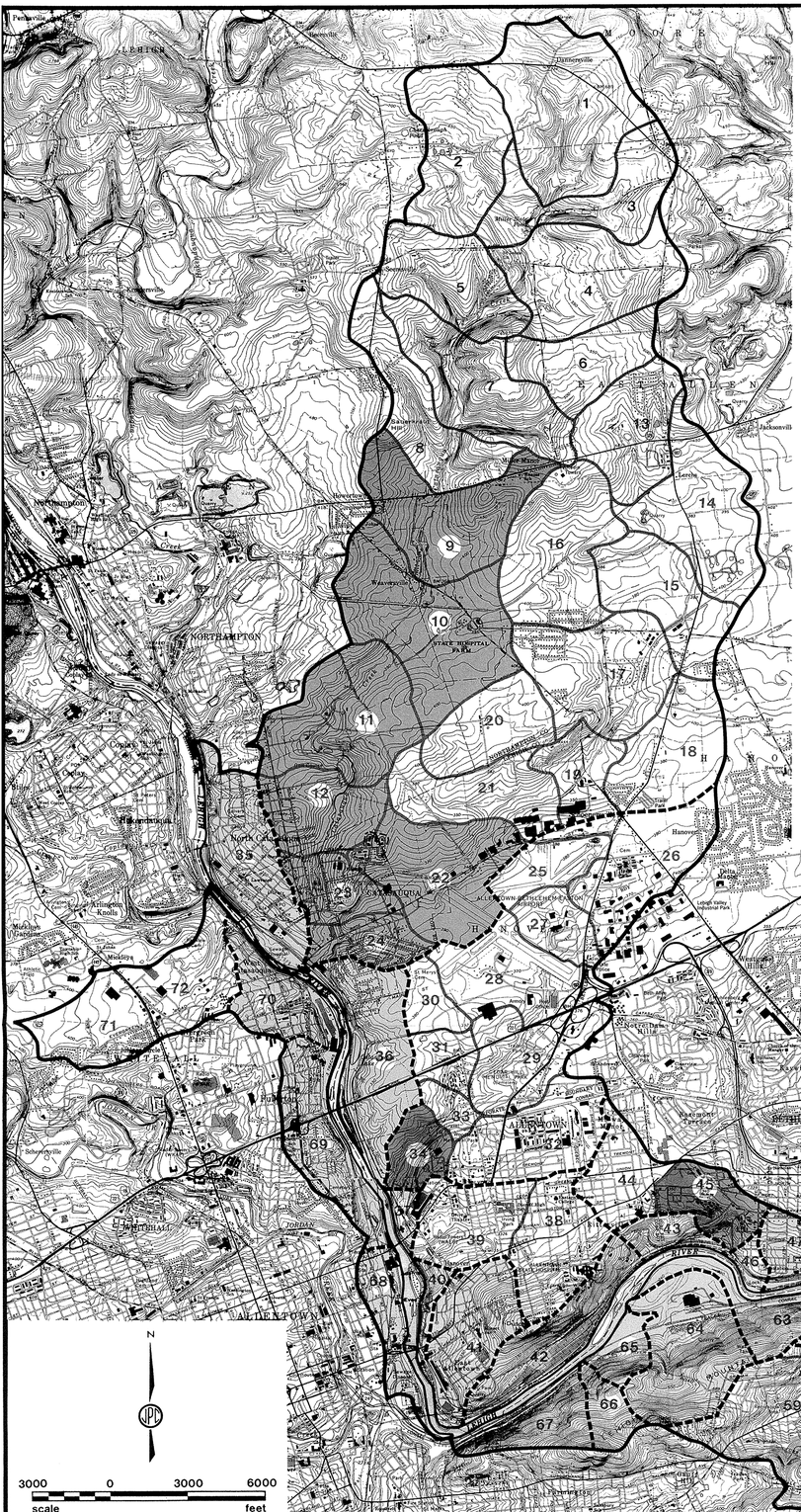


PLATE I
CATASAUQUA CREEK STUDY AREA
RELEASE RATE MAP

KEY

- ▩ Conditional No Detention I
- ▨ Conditional No Detention II
- ☐ 30/100% Release Rate
- ━ Study Area Boundary
- ╍ Watershed Boundaries
- ─ Subarea Boundaries

RELEASE RATE SUMMARY TABLE

Dual Release Rate catagories (30/--) define a 30% Release Rate for the 2 year storm and the indicated Release Rate for the 10, 25 and 100 year storms.

SUBAREA	RELEASE RATE (%)	SUBAREA	RELEASE RATE (%)
1 - 8	30/100	40 - 43	CND II*
9 - 12	CND I*	44	30/100
13 - 21	30/100	45	CND I*
22	CND I*	46 - 49	CND II*
23	CND I*	50	30/100
24	CND I*	51	30/100
25 - 33	30/100	52 - 58	CND II*
34	CND I*	59	30/100
35	CND II*	60	30/100
36	CND II*	61	CND I*
37	CND II*	62 - 70	CND II*
38	30/100	71	30/100
39	30/100	72	30/100

* Conditional No Detention Areas (I & II) do not need detention controls provided that adequate downstream capacity can be shown for increased peak flows.
(See Plan for additional details.)