US 290 / Hempstead Corridor Phase II

Drainage Impact & Mitigation Study

US 290: From Telge Rd. to W 34th St. [Sta. 2120+00 to 2855+00]

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1. INTRODUCTION

The study documented by this report is conducted for the Texas Department of Transportation (TxDOT) by the US 290/Hempstead Program Management Consultant (PMC). Conclusions and recommendations contained herein are intended to provide TxDOT with a preliminary drainage mitigation plan for the drainage systems related to this phase of the US 290/Hempstead Program (Program).

In many cases the Federal Emergency Management Agency (FEMA) effective models were modified to subdivide drainage areas where necessary to address particular areas of interest. The models were also modified to include proposed detention ponds for accurate storage routing. Study findings and recommendations are based upon best-available information and are subject to change as additional data becomes available.

1.1 Project Description and Location

This report presents the results and recommendations of the mitigation study to offset drainage impacts associated with the proposed improvements and widening of US 290 from Telge Rd. to W. 34th Street. This is the Phase II segment of the Program and is a continuation of the Phase I segment from W. 34th St. to IH 610 Interchange. This study is part of the US 290/Hempstead Comprehensive Corridor Drainage Impact Study (CCDIS).

As with the Phase I portion of the study, the majority of the Phase II study project reach is located within the White Oak Bayou [E100-00-00] Watershed. The sub-areas include White Oak Bayou Tributaries [E112-00-00, E127-00-00, E131-00-00, E135-00-00, and E139-00-00], Cole Creek [E117-00-00], Cole Creek Tributary [E117-07-00], Brickhouse Gully [E115-00-00], and Brickhouse Gully Tributary [E115-04-00]. The general topography of the project area is very flat overland slopes consisting of heavily developed commercial and residential areas for the majority of the US 290 corridor. The Phase II study limits are defined (approximately) as US 290 baseline Stations 2120+00 to 2855+00, a reach length of approximately 73,500 linear feet (13.92 miles). See **Exhibit 1** for project location and limits.

The existing US 290 typical section varies from three (3 each) inbound and outbound lanes to four (4 each) inbound and outbound mainlanes with an urban highway section and a mix of both open-ditch and storm sewer systems. Existing parallel frontage roads vary between two (2) lane urban section frontage roads and open ditch section.

Exhibit 2 shows the Proposed Typical Sections. The proposed US 290 roadway improvements will consist of reconstruction or widening of the mainlanes and reconstruction of the frontage roads and connector ramps. The majority of the proposed mainlanes will vary between four (4) and seven (7) eastbound and

westbound lanes with continuous twelve foot shoulders. The frontage roads vary from two (2) to four (4) lanes urban section for both eastbound and westbound lanes.

For an overview of the project in relation to existing and proposed drainage areas, see **Exhibit 3** and **Exhibit 4**.

1.2 Purpose

This study is compiled and executed to identify drainage conditions along the existing roadway; recommend drainage improvements; and determine and quantify the impact of the proposed improvements on the abutting properties and receiving streams. The study report incorporates major drainage elements associated with the existing roadway and recommends proposed size and location for major drainage elements to accommodate roadway improvements within the project reach. This report presents recommendations for mitigation measures that will be required to offset any calculated impacts due to the stated improvements.

1.3 Scope of Work

The scope of work consists of performing the analysis that would incorporate all the representative elements of the drainage system for the existing and proposed conditions. The intent is to establish a hydraulic baseline model based on the existing drainage system and demonstrate that the proposed roadway and drainage improvements would effectively convey and mitigate the flows to the outfalls. Additionally, the intent is to demonstrate that the proposed improvements will not adversely impact the abutting properties and receiving streams relative to the existing base conditions. The drainage report includes hydrologic and hydraulic computer models such as Hydrologic Engineering Center-Hydrologic Modeling System (HEC-HMS), Hydrologic Engineering Center-River Analysis System (HEC-RAS), and EPA-Storm Water Management Model (SWMM); drainage area maps; drainage outfall descriptions and storm-water storage requirements to offset any impacts associated with the construction of the proposed project. Mitigation measures will be evaluated and compared and a solution will be recommended. The report will present a comprehensive treatment of the drainage issues for the project area and will address the following items in detail:

- Determine the existing drainage area boundaries based on the best available data.
- Obtain existing HEC-HMS and HEC-RAS models from applicable drainage authorities, to the extent possible, for use in analysis and determination of existing 100-year water surface elevations at bayous, creeks, and ditch crossings along the project. This data will be utilized in the evaluation of the performance of the existing and proposed drainage improvements.
- Perform a preliminary hydrologic and hydraulic analysis of the existing drainage system to establish a baseline for comparison and to identify the existing problem

areas along the length of the project. The analysis will be performed for the 100-year storm frequency.

- Develop a preliminary design for the proposed drainage system trunk lines and perform a preliminary hydrologic and hydraulic analysis for each to identify the drainage elements to correct existing problems, to quantify the required detention volumes, and to provide recommendations for mitigation measures to offset any impacts on the receiving streams.
- Develop detailed hydrologic and hydraulic models for the selected alternative for the 100-year and 10-year storm frequencies. The performance of the proposed drainage improvements will be evaluated and compared with that of the existing conditions. The analysis will include elements of the mitigation.
- Limit the discharges to the receiving streams to existing capacity flows, as determined by study of existing conditions.
- Provide a recommended storm sewer trunk system design for the proposed conditions, including any adjustments to accommodate recommended mitigation.

2. METHODOLOGY

2.1 General Approach

SWMM was used as the primary hydraulic modeling tool to analyze the on-site (within the right of way) systems. The FEMA effective HEC-HMS and HEC-RAS models dated July 2007 for White Oak Bayou were modified when necessary to accurately model the existing, proposed, and mitigated conditions. Proposed detention ponds were included in HEC-HMS models and drainage areas were subdivided where necessary and used to establish the boundary conditions, including inflow hydrographs from contributing off-site areas upstream and tailwater elevations at the outfalls for the on-site systems.

The SWMM model was selected based on its ability to incorporate all the components and aspects of the drainage system, such as precipitation data for all required events, channels, culverts, weirs, inlets, and detention facilities. The SWMM model uses a series of nodes and links to represent the physical characteristics of the drainage system. The drainage system parameters are input into the model through the Hydraulic mode of SWMM. The SWMM program offers several methods for incorporating the runoff hydrographs into Hydraulic mode, including those developed using the HEC-HMS and Small Watershed Method (SWM) at specific nodal locations (Nodes) of the drainage network. The Hydraulic mode is a hydraulic flow routing model, which will be able to simulate a complex array of branched or looped drainage networks.

The Cole Creek systems, Outfall No. 11 thru Outfall No. 16, were mitigated along the mainstem [E117-00-00]; therefore, an overall watershed analysis was conducted on these systems to mitigate any impacts in flow. A SWMM analysis was also conducted on these outfalls in conjunction with the watershed analysis in order to mitigate any impacts in the 100-yr water surface elevation along the storm sewer system.

2.2 Model Development

The SWMM models were developed to evaluate the hydrologic and hydraulic relationship between the project drainage systems and the receiving streams. For this phase of the analysis, the SWMM models were designed to include the elements of the existing and proposed drainage systems to demonstrate the effectiveness of the systems to mitigate the impacts associated with the proposed project. In developing the SWMM model for the existing and proposed conditions, several components were needed to complete the SWMM models and are defined as follows:

- Detailed drainage areas for existing and proposed conditions were delineated using as-built plans, field reconnaissance, roadway profiles and aerial topography. **Exhibit 5** shows drainage areas for the existing systems. **Exhibit 6** shows drainage areas used for the preliminary stormsewer design. **Exhibit 7** shows drainage areas used for the mitigation conditions.

- The Rational Method was used to determine the peak flows and the Small Watershed Method was used to develop the runoff hydrographs for each of the on-site (roadway systems) sub-areas, which are subsequently imported into the SWMM Hydraulic model. The Harris County Flood Control District (HCFCD) Tropical Storm Allison Recovery Project (TSARP) 24-hour rainfall and loss methods were used to determine the direct runoff volume for the Small Watershed Method.
- Runoff hydrographs developed for the roadway sub-areas and small areas draining to the roadway were adjusted to coincide with the timing of the watershed hydrographs. This was accomplished by shifting the time to peak of the Small Watershed hydrograph such that the peak flow would occur at a time equal to 0.67 of the storm duration (24-hour) plus the time of concentration of its contributing drainage area. Use of the 0.67 factor is consistent with the peak rainfall ordinate on the HCFCD standard 24-hour storm distribution for watershed analysis. To maintain the relative impacts of the proposed roadway improvements to the outfalls, this method was applied to the existing and proposed condition models.
- The Hydraulic mode of the SWMM model requires defined boundary conditions to represent the tailwater elevations at the outfall points in the drainage network and inflow from any contributing off-site areas upstream of the project. At open channel outfalls, HEC-RAS was used to calculate a stage-discharge rating curve from the modified FEMA effective models. Tailwater at existing storm sewer system outfalls is based on top of pipe calculations (per the City of Houston drainage criteria) as it is more conservative than the normal depth calculations in the downstream systems. In order to prevent instability in the SWMM storm sewer models, a rating curve was derived to simulate a full flow condition, which would satisfy the City of Houston drainage criteria for storm sewer outfalls.
- The FEMA effective HEC-HMS models were modified and utilized to develop inflow hydrographs from contributing off-site areas upstream of US 290. Hydrographs from HEC-HMS were imported into SWMM at upstream nodes of links corresponding to the cross drainage structures.
- SWMM models developed for this analysis include an accounting of the "ponded" conditions (surface flooding) and sheet flow aspects of the drainage system. Consequently, a depth-area relationship was established at relevant nodes in the network to simulate the surface storage in the existing and proposed condition models. Additionally, a surface link (weir) was used to simulate carry-over (sheet flow) between successive nodes, where applicable.

2.3 Preliminary Drainage System Design Approach

Preliminary sizes for storm drain system trunk lines were determined using TxDOT's 2-year design frequency within the Geopak Drainage model. For this analysis, flows were included from a 150 ft. development strip beyond the right of way along the project. Developed conditions (C=0.65) were assumed for the 150 ft. development

strip. The drainage areas used in the analysis can be found in **Exhibit 6**. Preliminary trunk line sizes were adjusted as necessary in the mitigation analysis to accommodate 100-year sheet flow and optimize the function of detention basins.

In some areas the proposed expansion of US 290 acquires additional right-of-way from existing developments with onsite detention, which will be replaced with the proposed roadway expansion. In these cases, the existing conditions is analyzed using a "C" value of 0.35 and the proposed conditions is analyzed using a "C" value of 0.65. Essentially the acquired land is treated as undeveloped flow for existing conditions and developed flow for proposed conditions. The storm sewers along with the proposed detention sites will mitigate the loss of the existing onsite detention due to the expansion of US 290.

The typical proposed storm sewer design does not include the Railroad ROW. The RR ditch will be maintained and drain to the outfalls as in existing conditions. Any location where outfall drainage is brought into the proposed system, then flow from existing RR ROW would be contributing.

Preliminary sizes of cross drainage structures were determined through SWMM modeling of cross culvert locations. A detailed analysis of the cross culverts and bridges will be conducted once the proposed preliminary layouts have been developed.

2.4 Survey and Elevation Datum

A field survey was not conducted for this study. Survey data from previous studies was used when available. Overbank elevation data was obtained from TxDOT's topographic mapping developed for the Program and from HCFCD's LiDAR survey mapping.

Elevations presented in this report are based on the vertical datum used for the TxDOT project - the 1988 NAVD (1991 Adjustment). Elevations in the FEMA effective HEC-RAS models are based on the 1988 NAVD (2001 adjustment).

Additionally, based on the difference between the downstream flowline in the existing as-built plans, the TxDOT DTM, and available survey, each individual outfall system was compared and the difference in elevations found are summarized in the following table.

TABLE 2.4.1 - Existing As-Built Elevation Adjustment Summary

SYSTEM	Outfall No.	Elevation Difference (ft)
White Oak Bayou [E100-00-00]	1	-3.00
White Oak Bayou Trib. [E131-00-00]	2	-3.00
SH 6	3	-3.00
FM 1960	4	-2.50
White Oak Bayou Trib. [E112-00-00]	5	-3.50
White Oak Bayou Trib. [E135-00-00]	6	-3.78
White Oak Bayou Trib. [E127-00-00]	7	-4.50
Beltway 8 System [to White Oak Bayou Trib. E139-00-00]	8	-4.50
Beltway 8 South System	8A/8B	-4.87
Cole Creek [E117-00-00]	9	-7.00
Gessner Dr. System [to Cole Creek]	10	-7.00
Cole Creek Trib. [E117-07-00]	11	-6.74
Outlet Ditch to Cole Creek	12	-6.34
Fairbanks N. Houston System	13	-6.38
Outlet Ditch to Cole Creek	14	-6.41
Outlet Ditch to Cole Creek	15	-6.18
Hollister Dr. System	16	-6.18
Langfield St [to Brickhouse Gully Trib. E115-04-00]	17	-6.48
Pinemont Dr. System	18	-6.48
Bingle Rd. System.	19	-5.19
W. 43rd St. System [to Brickhouse Gully Trib.]	20	-5.19
Hewitt Dr. Outfall [to E515-01-00]	21	-5.19
Brickhouse Gully [E115-00-00]	22	-5.19

Consequently, based on the stated recommended adjustments, and for all analysis involving conversion of the HEC-RAS model results tied to these monuments, an adjustment value as tabulated below was used to convert model results to TxDOT project vertical datum.

TABLE 2.4.2 - FEMA/TxDOT Results Summary Elevation Adjustment

SYSTEM	Outfall No.	FEMA to TxDOT (ft)
White Oak Bayou [E100-00-00]	1	+0.59
White Oak Bayou Trib. [E131-00-00]	2	+0.59
SH 6	3	--
FM 1960	4	--
White Oak Bayou Trib. [E112-00-00]	5	--
White Oak Bayou Trib. [E135-00-00]	6	+0.68
White Oak Bayou Trib. [E127-00-00]	7	+0.63
Beltway 8 System [to White Oak Bayou Trib. E139-00-00]	8	+0.63
Cole Creek [E117-00-00]	9	+0.41
Gessner Dr. System [to Cole Creek]	10	+0.41
Cole Creek Trib. [E117-07-00]	11	+0.37
Outlet Ditch to Cole Creek	12	+0.35
Fairbanks N. Houston System	13	+0.33
Outlet Ditch to Cole Creek	14	+0.29
Outlet Ditch to Cole Creek	15	+0.28
Hollister Dr. System	16	+0.26
Langfield St [to Brickhouse Gully Trib. E115-04-00]	17	+0.20
Pinemont Dr. System	18	+0.20
Bingle Rd. System.	19	+0.17
W. 43rd St. System [to Brickhouse Gully Trib.]	20	+0.14
Hewitt Dr. Outfall [to E515-01-00]	21	+0.14
Brickhouse Gully [E115-00-00]	22	+0.10

2.5 Cole Creek [E117-00-00] Watershed Analysis Approach

HEC-HMS (version 3.1.0) was utilized for the Cole Creek watershed hydrologic analysis. The FEMA effective models dated July 2007 for White Oak Bayou were modified to produce revised existing and mitigated models.

HEC-RAS (version 3.0.1) was utilized for the Cole Creek watershed hydraulic analysis. The FEMA effective models dated July 2007 for White Oak Bayou and Buffalo Bayou were modified to produce revised existing and mitigated models.

Flows were calculated and distributed based on the methodology used in the FEMA effective models. The HEC-RAS flow distribution was based on the alternative method documented in the TSARP technical white paper "Recommendation for: Determining Discharges in Upstream Reaches of Subareas".

Several changes were made to the White Oak Bayou FEMA effective models for the revised existing conditions. First, drainage area E117A was divided into multiple drainage areas. The new drainage areas were developed to model the proposed detention facilities that occur in the mitigated conditions models. These areas were changed in the revised existing model in order to have an equal base for comparison. The FEMA effective and revised existing drainage area maps are included in **Exhibits 10 and 11**, respectively.

Second, the percent urban development and percent impervious were increased for drainage area E117A1 and E117A2 to account for the American Plaza development between Gessner and West Little York. Any undeveloped areas within the proposed project ROW were increased to 65 percent development with detention in order to account for future development that has already been mitigated with downstream channel improvements.

Third, the time of concentration (Tc) and storage coefficient (R) were updated based on the changes to the drainage areas and the American Plaza development. The FEMA effective and revised existing Tc and R calculations are included in **Table 19 and 20**, respectively. Also, new storage routing reaches were created to route the flows from the new drainage areas.

The revised existing peak flow comparisons are included in **Table 21** for the 10-, 50-, and 100-year frequency events.

The [E117-00-00] revised existing hydraulic model was adjusted at cross sections 22996 and 22854. The right overbank was adjusted at these two cross section locations to properly model the existing US 290 bridge embankment. The E117-00-00 culvert structure at Gessner road was updated in the revised existing model based on survey data. Additional cross sections were added to the model upstream of Gessner road to accurately model the US 290 westbound frontage road bridge and the Gessner road culvert structure. No other geometric changes were made to the [E117-00-00] revised existing hydraulic model. Changes were made to the flows as determined in the revised existing HEC-HMS models.

The revised existing water surface elevations are included in **Table 22**.

The revised existing hydrologic model was used as a starting point to build the mitigated conditions models. In the mitigated hydrologic model, the basin parameters were adjusted for drainage areas along the project reach to account for drainage area changes, the increase in percent impervious due to the proposed construction, and changes to the Tc and R values. The mitigated drainage area map is shown in **Exhibit 12**. The Tc and R values were adjusted to account for the following changes.

- For detention facilities modeled within HEC-HMS, the percent urban development was increased for undeveloped areas within the Hempstead Tollway ROW. This adjustment was made to drainage area E117A1.
- For detention facilities not modeled within HEC-HMS, the percent urban development affected by detention was increased for the proposed detention areas and undeveloped areas within the Hempstead Tollway ROW. This adjustment was made to drainage areas E117A2 and E117A3.

The mitigated conditions Tc and R calculations are included in **Table 23**.

In the mitigated hydrologic model, the proposed detention facilities located along the [E117-00-00] main stem were modeled within HEC-HMS. These ponds were

modeled using an inflow diversion relationship calculated from a HCFCD spreadsheet that takes into account the effects of weir submergence and the Davis and Holley equations of adjustments for side weir effects. The proposed detention facility storage volumes and outflow structures were modeled within the reservoir option within HEC-HMS. For these detention facilities the volume and weir geometry was optimized to eliminate any impacts in flow and water surface elevations.

The US 290 proposed construction will widen the mainlanes and raise the westbound frontage road, which will add fill volume to the existing 100-year floodplain. The storage outflow relationship in the mitigation model was adjusted for [E117-00-00] to account for loss of flood storage volume due to the proposed project.

The mitigated conditions peak flow comparisons are included in **Table 24** for the 10-, 50-, and 100-year frequency events.

For the [E117-00-00] mitigated hydraulic model, the cross section overbank geometry has been updated to account for the loss of floodplain storage volume due to the proposed project. Proposed channel improvements were modeled from HEC-RAS station 23347 to 24075 to mitigate the impacts due to the floodplain loss. The proposed channel improvements widen the northern bank of Cole Creek [E117-00-00] by five feet. No other geometric changes were made to the [E117-00-00] mitigated hydraulic model. Changes were made to the flows as determined in the mitigated HEC-HMS models.

The mitigated water surface elevations are included in **Table 25**. The HEC-HMS and HEC-RAS output is included in **Appendix D**.

3. HYDROLOGIC AND HYDRAULIC ANALYSIS

The hydrologic and hydraulic analysis for this study is designed to establish peak discharges to the project outfalls, identify potential flooding, determine potential impacts of proposed improvements, and provide a mitigation plan that would offset any impacts on receiving streams and/or abutting properties.

3.1 Outfall Identification

The overall drainage areas for the project are drained by sewer systems to twenty-four (24) outfalls. **Exhibit 3** identifies the general location of the project outfalls. These outfalls include six (6) major stream crossings; nine (9) major drainage storm sewer systems that discharge to Cole Creek, Brickhouse Gully Tributary, or White Oak Bayou; and nine (9) drainage storm sewer systems that discharge to existing storm sewer systems. The outfalls identified are listed below:

TABLE 3.1.1 - Existing Outfalls

Outfall No.	Existing Outfall Description	Approximate B/L Station	Existing Outfall Structure
1	White Oak Bayou [E100-00-00]	2185+75	5'x5' RCB
2	White Oak Bayou Trib. [E131-00-00]	2238+00	2-7'x5' RCB
3	SH 6	100+00	72" RCP
4	FM 1960	170+00	6'x6' RCB
5	White Oak Bayou Trib. [E112-00-00]	2285+00	10'x5' RCB
6	White Oak Bayou Trib. [E135-00-00]	2349+50	Bridge
7	White Oak Bayou Trib. [E127-00-00]	2409+50	Bridge
8	Beltway 8 System [to White Oak Bayou Trib. E139-00-00]	2508+00	2-8'x8' RCB
8A	Beltway 8 South [to Cole Creek E117-00-00]	100+00	6'x4' RCB
8B	Beltway 8 South [to Cole Creek E117-00-00]	100+00	5'x2' RCB
9	Cole Creek [E117-00-00]	2551+50	Bridge
10	Gessner Dr. System [to Cole Creek]	2557+00	66" RCP
11	Cole Creek Trib. [E117-07-00]	2586+00	Bridge
12	Outlet Ditch to Cole Creek	2595+25	78" RCP
13	Fairbanks N. Houston System	2616+00	8'x12' RCB
14	Outlet Ditch to Cole Creek	2643+00	78" RCP
15	Outlet Ditch to Cole Creek	2662+50	2-60" RCP
16	Hollister Dr. System	2689+00	78" RCP
17	Langfield St [to Brickhouse Gully Trib. E115-04-00]	2713+75	8'x5' RCB
18	Pinemont Dr. System	2737+50	7'x5' RCB
19	Bingle Rd. System.	2756+25	66" & 36" RCP
20	W. 43rd St. System [to Brickhouse Gully Trib.]	2789+00	78" RCP
21	Hewitt Dr. Outfall [to E515-01-00]	2799+50	54" RCP
22	Brickhouse Gully [E115-00-00]	2810+00	Bridge

3.2 Hydrologic Analysis Summary

Peak flows and hydrographs for on-site areas are computed with the Rational Method and Small Watershed Method, respectively. Hydrographs for off-site areas upstream were obtained from the modified FEMA effective models, which were computed with HEC-HMS (**Appendix D**), using HCFCD (TSARP) methodology. All hydrographs were imported into drainage system nodes and routed through existing and proposed drainage system networks in the SWMM analysis.

On-site areas are within the proposed ROW. The change in computed hydrologic parameters from existing to proposed conditions is generally due to the proposed project within the onsite areas. Off-site areas are those properties that contribute runoff to the ROW, but are outside of the proposed ROW. Off-site areas generally are unchanged by the proposed project, and hydrologic parameters remain the same. There are some variations from this general approach which are discussed in the individual outfall narratives in **Section 4**.

Existing and proposed drainage areas, SWMM network links and nodes and corresponding designations are shown on Existing, Stormsewer, and Mitigation Drainage Area maps (**Exhibits 5, 6, and 7**). Detailed summaries of the SWMM analysis for existing and proposed conditions are contained in the **Hydraulic Results Summary Tables**. Rational Method hydrologic analysis data are contained in **Appendix E** for each sub-area in the existing and proposed drainage systems. The tables located in **Appendix E** document the general land use for each drainage area as well as the corresponding percent impervious.

Computed hydrologic parameters are summarized below by individual outfall.

TABLE 3.2.1 - Outfall Hydrologic Parameters

Outfall	System Description	Existing		Proposed	
		Drainage Area Ac.	% Impervious	Drainage Area Ac.	% Impervious
1	White Oak Bayou [E100-00-00]	60.55	62	107.83	85
2	White Oak Bayou Trib. [E131-00-00]	102.11	35	136.28	52
3	SH 6	19.6	41	18.44	38
4	FM 1960	28.99	59	26.55	63
5	White Oak Bayou Trib. [E112-00-00]	183.03	31	233.68	40
6	White Oak Bayou Trib. [E135-00-00]	179.73	36	192.93	65
7	White Oak Bayou Trib. [E127-00-00]	119.84	62	73.55	64
8	Beltway 8 System [to White Oak Bayou Trib. E139-00-00]	141.93	48	250.04	66
8A/8B	Beltway 8 South [to Cole Creek E117-00-00]	56.28	59	57.42	63
9	Cole Creek [E117-00-00]	205.46	45	202.93	55
10	Gessner Dr. System [to Cole Creek]	8.57	59	14.18	82

Outfall	System Description	Existing		Proposed	
		Drainage Area Ac.	% Impervious	Drainage Area Ac.	% Impervious
11	Cole Creek Trib. [E117-07-00]	30.63	56	26.90	69
12	Outlet Ditch to Cole Creek	53.61	54	53.66	60
13	Fairbanks N. Houston System	25.65	63	24.02	73
14	Outlet Ditch to Cole Creek	52.7	37	53.27	45
15	Outlet Ditch to Cole Creek	154.09	52	158.78	54
16	Hollister Dr. System	92.9	56	86.47	59
17	Langfield St [to Brickhouse Gully Trib. E115-04-00]	105.12	47	101.21	52
18	Pinemont Dr. System	73.1	41	84.22	51
19	Bingle Rd. System.	63.7	46	68.15	51
20	W. 43rd St. System [to Brickhouse Gully Trib.]	99.13	43	29.02	55
21	Hewitt Dr. Outfall [to E515-01-00]	68.05	56	7.17	78
22	Brickhouse Gully [E115-00-00]	116.27	61	243.58	57

Hydrologic analysis results for the 100-year event are summarized below by individual outfall. Peak flows are based on routed on-site and off-site hydrographs for existing, proposed (without mitigation), and mitigated (proposed with mitigation) conditions.

TABLE 3.2.2 - 100-yr Hydrologic Results

Outfall	System Description	100-yr Flow			
		Existing (cfs) [1]	Proposed (cfs) [2]	Mitigated (cfs) [3]	Difference (cfs) [3]-[1]
1	White Oak Bayou [E100-00-00]	252	402	243	-9
2	White Oak Bayou Trib. [E131-00-00]	362	422	330	-32
3	SH 6	117	114	112	-5
4	FM 1960	221	211	212	-9
5	White Oak Bayou Trib. [E112-00-00]	402	497	389	-13
6	White Oak Bayou Trib. [E135-00-00]	1132	1436	1022	-110
7	White Oak Bayou Trib. [E127-00-00]	1197	1202	1189	-8
8	Beltway 8 System [to White Oak Bayou Trib. E139-00-00]	767	937	621	-146
8A	Beltway 8 South [to Cole Creek E117-00-00]	209	201	196	-13
8B	Beltway 8 South [to Cole Creek E117-00-00]	27	20	27	0
9	Cole Creek [E117-00-00]	2154	2390	2073	-81
10	Gessner Dr. System [to Cole Creek]	2154	2390	2073	-81
11	Cole Creek Trib. [E117-07-00]	598	702	630	32
12	Outlet Ditch to Cole Creek	211	228	235	24
13	Fairbanks N. Houston System	606	767	591	-15

Outfall	System Description	100-yr Flow			
		Existing (cfs) [1]	Proposed (cfs) [2]	Mitigated (cfs) [3]	Difference (cfs) [3]-[1]
14	Outlet Ditch to Cole Creek	199	263	266	67
15	Outlet Ditch to Cole Creek	300	538	567	267
16	Hollister Dr. System	296	296	299	3
17	Langfield St [to Brickhouse Gully Trib. E115-04-00]	221	310	200	-21
18	Pinemont Dr. System	157	192	144	-13
19	Bingle Rd. System.	271	287	259	-12
20	W. 43rd St. System [to Brickhouse Gully Trib.]	350	114	205	-145
21	Hewitt Dr. Outfall [to E515-01-00]	193	179	180	-13
22	Brickhouse Gully [E115-00-00]	8928	9007	8770	-158

Hydrologic analysis results for the 10-year event are summarized below by individual outfall. Peak flows are based on routed on-site and off-site hydrographs for existing, proposed (without mitigation), and mitigated (proposed with mitigation) conditions.

TABLE 3.2.3 - 10-yr Hydrologic Results

Outfall	System Description	10-yr Flow			
		Existing (cfs) [1]	Proposed (cfs) [2]	Mitigated (cfs) [3]	Difference (cfs) [3]-[1]
1	White Oak Bayou [E100-00-00]	198	334	162	-36
2	White Oak Bayou Trib. [E131-00-00]	285	355	280	-5
3	SH 6	82	77	77	-5
4	FM 1960	171	171	151	-20
5	White Oak Bayou Trib. [E112-00-00]	333	453	298	-35
6	White Oak Bayou Trib. [E135-00-00]	603	728	560	-43
7	White Oak Bayou Trib. [E127-00-00]	771	676	667	-104
8	Beltway 8 System [to White Oak Bayou Trib. E139-00-00]	631	856	631	0
8A	Beltway 8 South [to Cole Creek E117-00-00]	181	182	164	-17
8B	Beltway 8 South [to Cole Creek E117-00-00]	20	15	20	0
9	Cole Creek [E117-00-00]	1452	1423	1182	-270
10	Gessner Dr. System [to Cole Creek]	1452	1423	1182	-270
11	Cole Creek Trib. [E117-07-00]	414	482	380	-34
12	Outlet Ditch to Cole Creek	219	224	226	7
13	Fairbanks N. Houston System	419	585	358	-61
14	Outlet Ditch to Cole Creek	174	216	216	42
15	Outlet Ditch to Cole Creek	326	516	516	190
16	Hollister Dr. System	334	311	311	-23

Outfall	System Description	10-yr Flow			
		Existing (cfs) [1]	Proposed (cfs) [2]	Mitigated (cfs) [3]	Difference (cfs) [3]-[1]
17	Langfield St [to Brickhouse Gully Trib. E115-04-00]	328	415	278	-50
18	Pinemont Dr. System	231	287	80	-151
19	Bingle Rd. System.	297	338	292	-5
20	W. 43rd St. System [to Brickhouse Gully Trib.]	350	79	128	-222
21	Hewitt Dr. Outfall [to E515-01-00]	171	155	150	-21
22	Brickhouse Gully [E115-00-00]	6348	6422	5926	-422

Outfall No. 11 through Outfall No. 16 drain to Cole Creek [E117-00-00], which runs parallel to US 290. Due to lack of available land it was not feasible to mitigate the increase in flows at these outfalls. Therefore, mitigation was placed along Cole Creek [E117-00-00] in order to mitigate the increase in flows from Outfall No. 11 through Outfall No. 16. The flows at these outfalls are allowed to leave the TxDOT system unmitigated. However no impact in the 100-year water surface elevation was allowed to occur. An overall watershed analysis was conducted on Cole Creek [E117-00-00] and is discussed in detail in Sections 2.5 and 3.5

3.3 Hydraulic Analysis Summary

As noted above, preliminary sizes for storm drain system trunk lines were determined based on a 2-year design flow and adjusted, as necessary, to accommodate 100-yr sheet flow and optimize detention basin function. Preliminary schematic frontage road profiles were developed by the PMC for this study, with the profile grade line (PGL) typically located at the outside edge of pavement (gutter line).

Program drainage criteria require minimum frontage road elevations above the 10-year water surface elevation, allowing no more than one lane of ponding, and minimum mainlane elevations above the 100-year water surface elevation, allowing ponding only on the shoulder. The 10-yr and 100-yr water surface profiles generated from the SWMM analysis were plotted against the proposed frontage road and mainlane profiles. This comparison indicates that many areas of the frontage road are below the 10-year water surface and some areas of the mainlanes below the 100-year water surface elevation. Additionally, the water surface profiles from the FEMA Effective models for Cole Creek and E115-04-00 were plotted against the frontage road and mainlane profiles. In some areas the water surface profile from the FEMA Effective models (of the channels) exceeds the water surface profile generated by SWMM along the frontage road. The two water surface profiles were compared and the higher of the two was used as the control in determining location and elevation of the required adjustments to the roadway profiles. The following tables estimate the general locations along the frontage roads and mainlanes that must be raised in order to meet the design criteria.

It should be noted that the following tables only approximate the areas along the profiles that may not meet the design criteria. The final design of the roadway profiles will be developed by each SDC with consideration to the water surface elevations and specifics related to the roadway, such as varying width of pavement and superelevation.

TABLE 3.3.1 - Recommended Adjustments to Mainlane Roadway Profile

MAINLANE PROFILE ADJUSTMENTS		100-YR WSE	
Begin Station	End Station	Begin Adj. (ft)	End Adj. (ft)
2134+58.30	2153+20.53	138.24	135.22
2301+73.22	2309+11.57	120.88	119.84
2364+66.67	2366+49.46	115.48	115.60
2423+19.83	2424+06.32	109.25	109.25
2541+69.05	2543+71.83	95.10	94.91
2572+42.94	2604+51.72	93.06	91.57
2793+95.21	2795+44.21	71.34	71.17

TABLE 3.3.2 -Recommended Adjustments to WBFR Roadway Profile

WBFR PROFILE ADJUSTMENTS		10-YR WSE	
Begin Station	End Station	Begin Adj. (ft)	End Adj. (ft)
2202+78.69	2204+77.90	129.65	129.45
2423+77.42	2424+05.75	106.30	106.18
2547+33.77	2563+09.55	93.25	92.95
2565+59.85	2568+25.00	92.84	92.79
2575+54.25	2602+44.13	91.18	89.40
2603+76.15	2610+76.67	89.29	88.19
2612+09.50	2626+13.28	88.15	87.20
2687+09.84	2687+64.67	81.85	81.82
2689+74.38	2690+23.06	81.71	81.70
2704+78.91	2706+29.70	81.45	81.44
2710+96.94	2713+37.90	81.40	81.37
2716+67.06	2718+59.22	81.35	81.18
2722+69.67	2737+36.11	81.60	79.96
2740+58.40	2743+96.96	79.28	78.77
2766+15.95	2785+86.21	74.38	70.75
2822+90.02	2829+21.03	68.00	68.28
2845+37.49	2851+76.49	68.89	69.10

TABLE 3.3.3 -Recommended Adjustments to EBFR Roadway Profile

EBFR PROFILE ADJUSTMENTS		10-YR WSE	
Begin Station	End Station	Begin Adj. (ft)	End Adj. (ft)
2123+74.30	2125+80.09	138.75	138.62
2245+24.79	2248+29.55	125.77	125.93
2251+35.41	2253+84.30	126.05	126.20
2307+62.03	2309+11.58	119.70	119.58
2311+49.09	2312+30.20	119.31	119.22
2314+78.68	2316+14.73	118.93	118.77
2318+55.59	2319+87.54	118.47	118.32
2326+92.73	2327+04.00	117.56	117.54
2547+58.63	2552+93.19	93.00	93.18
2554+62.73	2563+52.20	93.15	93.00
2594+07.27	2629+55.16	89.99	87.12
2686+84.10	2691+41.78	81.86	81.70
2696+89.09	2697+26.66	81.83	81.88
2727+54.60	2730+45.40	81.60	81.60
2733+54.60	2736+64.72	81.60	80.51
2770+00.52	2780+30.28	74.34	71.81
2825+72.36	2829+78.49	68.56	68.65
2841+51.88	2852+94.90	68.65	68.65

Hydraulic analysis results and drainage system configuration for existing, proposed with mitigation, and proposed without mitigation conditions are contained in the **Hydraulic Results Summary Tables**. Preliminary frontage road profiles and proposed storm drain trunk line sizes, locations and profiles are provided in **Exhibit 8**. Hydraulic analysis water surface elevations for the 100-year event are summarized below by individual outfall.

TABLE 3.3.4 - 100-yr Water Surface Elevations

Outfall	System Description	100-yr Water Surface Elevations			
		Existing (ft) [1]	Proposed (ft) [2]	Mitigated (ft) [3]	Difference (ft) [3]-[1]
1	White Oak Bayou [E100-00-00]	128.60	130.11	128.39	-0.21
2	White Oak Bayou Trib. [E131-00-00]	125.21	125.86	124.83	-0.38
3	SH 6	120.19	120.19	120.19	0.00
4	FM 1960	118.85	118.85	118.85	0.00
5	White Oak Bayou Trib. [E112-00-00]	115.72	116.26	115.63	-0.09
6	White Oak Bayou Trib. [E135-00-00]	114.21	114.90	113.80	-0.41
7	White Oak Bayou Trib. [E127-00-00]	108.87	107.03	107.02	-1.85
8	Beltway 8 System [to White Oak Bayou Trib. E139-00-00]	102.90	102.88	102.88	-0.02
8A	Beltway 8 South [to Cole Creek E117-00-00]	97.45	97.96	97.45	0.00
8B	Beltway 8 South [to Cole Creek E117-00-00]	97.55	97.94	97.53	-0.02
9	Cole Creek [E117-00-00]	94.18	94.18	94.09	-0.09
10	Gessner Dr. System [to Cole Creek]	94.18	94.18	94.09	-0.09
11	Cole Creek Trib. [E117-07-00]	91.64	91.64	91.55	-0.09
12	Outlet Ditch to Cole Creek	91.20	91.20	91.09	-0.11
13	Fairbanks N. Houston System	89.14	89.14	89.07	-0.07
14	Outlet Ditch to Cole Creek	86.72	86.72	86.57	-0.15
15	Outlet Ditch to Cole Creek	85.41	85.41	85.35	-0.06
16	Hollister Dr. System	84.15	84.15	84.10	-0.05
17	Langfield St [to Brickhouse Gully Trib. E115-04-00]	82.35	82.35	82.24	-0.11
18	Pinemont Dr. System	82.00	82.00	81.92	-0.08
19	Bingle Rd. System.	76.49	76.49	76.43	-0.06
20	W. 43rd St. System [to Brickhouse Gully Trib.]	72.92	72.91	72.76	-0.16
21	Hewitt Dr. Outfall [to E515-01-00]	70.00	70.08	70.00	0.00
22	Brickhouse Gully [E115-00-00]	69.22	69.22	68.84	-0.38

Hydraulic analysis water surface elevations for the 10-year event are summarized below by individual outfall.

TABLE 3.3.5 - 10-yr Water Surface Elevations

Outfall	System Description	10-yr Water Surface Elevations			
		Existing (ft) [1]	Proposed (ft) [2]	Mitigated (ft) [3]	Difference (ft) [3]-[1]
1	White Oak Bayou [E100-00-00]	127.22	129.68	126.28	-0.94
2	White Oak Bayou Trib. [E131-00-00]	124.14	125.13	124.06	-0.08

Outfall	System Description	10-yr Water Surface Elevations			
		Existing (ft) [1]	Proposed (ft) [2]	Mitigated (ft) [3]	Difference (ft) [3]-[1]
3	SH 6	119.71	119.47	119.52	-0.19
4	FM 1960	118.85	118.85	118.85	0.00
5	White Oak Bayou Trib. [E112-00-00]	115.26	116.02	115.01	-0.25
6	White Oak Bayou Trib. [E135-00-00]	110.88	112.37	110.86	-0.02
7	White Oak Bayou Trib. [E127-00-00]	105.73	105.27	105.23	-0.50
8	Beltway 8 System [to White Oak Bayou Trib. E139-00-00]	100.26	100.17	100.17	-0.09
8A	Beltway 8 South [to Cole Creek E117-00-00]	97.33	97.96	97.33	0.00
8B	Beltway 8 South [to Cole Creek E117-00-00]	97.31	97.76	97.31	0.00
9	Cole Creek [E117-00-00]	93.13	93.13	92.95	-0.18
10	Gessner Dr. System [to Cole Creek]	93.13	93.13	92.95	-0.18
11	Cole Creek Trib. [E117-07-00]	90.30	90.30	90.02	-0.28
12	Outlet Ditch to Cole Creek	89.83	89.83	89.43	-0.40
13	Fairbanks N. Houston System	87.76	87.76	87.68	-0.08
14	Outlet Ditch to Cole Creek	83.93	83.93	83.85	-0.08
15	Outlet Ditch to Cole Creek	82.68	82.68	82.60	-0.08
16	Hollister Dr. System	81.52	81.52	81.43	-0.09
17	Langfield St [to Brickhouse Gully Trib. E115-04-00]	81.65	81.65	81.59	-0.06
18	Pinemont Dr. System	81.17	81.17	81.09	-0.08
19	Bingle Rd. System.	75.16	75.16	74.88	-0.28
20	W. 43rd St. System [to Brickhouse Gully Trib.]	69.60	69.68	68.52	-1.08
21	Hewitt Dr. Outfall [to E515-01-00]	70.00	70.00	70.00	0.00
22	Brickhouse Gully [E115-00-00]	67.73	67.73	67.53	-0.20

The following table summarizes the cross drainage structures and hydraulic data:

TABLE 3.3.6 - Hydraulic Data for Cross Drainage Structures

Existing Stream Crossing	Approximate B/L Station	Existing Structure	Proposed Structure	Existing 10-yr WSEL U/S	Mitigated 10-yr WSEL U/S	Existing 100-yr WSEL U/S	Mitigated 100-yr WSEL U/S
White Oak Bayou Trib. [E135-00-00]	2349+50	Bridge	New Bridge	111.15	111.01	114.32	113.92
White Oak Bayou Trib. [E127-00-00]	2409+50	Bridge	New Bridge	106.94	106.55	109.80	108.87
Cole Creek [E117-00-00]	2551+50	Bridge	New Bridge	93.24	93.04	94.25	94.19
Cole Creek Trib. [E117-07-00]	2586+00	Bridge	New Bridge	90.56	90.07	91.92	91.60
Brickhouse Gully [E115-00-00]	2810+00	Bridge	New Bridge	68.71	67.90	70.97	70.74

Note: These numbers are an estimate from the SWMM Hydraulic Analysis. Detailed Hydraulic Analysis of Bridge and Cross Culverts have been submitted in separate reports.

3.4 Impact Mitigation Analysis Summary

Potential drainage impacts of the US 290 Phase II improvements include three major components:

- increases in peak runoff rates at outfalls due to increased imperviousness and improved drainage systems,
- displacement of flood storage volume within the 100-year floodplain, and
- increases in water surface elevation at stream crossings and along the project on abutting properties.

Detention mitigation 'storage required' estimates to offset potential runoff impacts were initially based on a storage rate of 0.45 ac-ft/ac and applied to the drainage system on-site area. At some locations, refined mitigation storage estimates were based on proposed hydrograph volume above a straight-line projection from the hydrograph origin to the existing peak flow value on the recession limb, per HCFCD methods.

Displaced floodplain volume due to proposed fill within the 100-year floodplain will occur within the Cole Creek and Brickhouse Gully floodplains. Effective FEMA Flood Insurance Rate Maps (FIRM's) are included in **Appendix A** and show areas of mapped 100-year floodplains along the project.

Floodplain fill volume estimates were added to the storage estimates for runoff mitigation noted above to provide a preliminary detention pond volume for each drainage system outfall. SWMM model networks were established to model available flood storage within the right of way for existing and proposed conditions. Proposed detention ponds were configured near or at outfalls to mitigate potential impacts to receiving waterways. The SWMM model provides a complete analysis of flood storage volumes within the right of way, including ponding on the roadway, in ditches, storm sewers and in proposed detention ponds. As a result, for several outfalls, the design storage provided is less than the initial estimates.

The following table summarizes estimated mitigation volumes (storage required) by system and proposed detention mitigation pond characteristics. Preliminary layouts of proposed detention ponds are included in **Exhibit 9**.

TABLE 3.4.1 – Proposed Detention Ponds

Detention Basin	Mitigated Outfall	Estimated Floodplain Fill (acre-ft)	Estimated Storage Required (acre-ft)	Design Storage Provided (acre-ft)	Max. Ponding Elev. (ft)	Inflow/Outflow Pipe Size	Top of Bank Elevation (ft)	Min. Basin Elevation (ft)	Surface Area (acres)
POND 8A	1	-	42.85	46.02	131.81	3-7'x5' RCB	132.00	124.74	8.46
POND 8B	2	-	35.72	37.60	125.28	8'X5' RCB	128.00	121.18	11.76
POND 8C	5	-	40.75	34.40	120.87	9'X5' RCB	122.00	113.32	6.01
POND 7A1	6	1.09	58.47	30.37	115.53	24" RCP	115.00	107.00	4.39
POND 7A2	6		37.76	115.40	115.46	24" RCP	115.00	107.00	15.94
POND 7B	7, 8	-0.66		56.46	102.93	8'X5' RCB	107.00	95.00	9.20

Detention Basin	Mitigated Outfall	Estimated Floodplain Fill (acre-ft)	Estimated Storage Required (acre-ft)	Design Storage Provided (acre-ft)	Max. Ponding Elev. (ft)	Inflow/Outflow Pipe Size	Top of Bank Elevation (ft)	Min. Basin Elevation (ft)	Surface Area (acres)
POND 6A	7, 8		128.71	92.40	102.90	8'x4' RCB	103.00	91.00	10.03
POND 6B	7, 8			9.20	102.89	9'X6' RCB	103.00	88.00	1.21
POND 6E	9, 10	21.00	19.27	23.97	94.24	5'X4' RCB	98.00	89.42	6.41
POND 6D	9, 10			4.83	94.86	36" RCP	95.00	88.23	1.01
POND 6C	9, 10			10.45	96.20	36" RCP	95.00	88.10	1.61
POND 5C	9, 10			4.36	94.35	36" RCP	93.50	84.96	0.74
POND 6H	8A	-	12.86*	9.22	103.32	6'x4' RCB	103.50	96.39	2.39
POND 6F	8A	-		3.01	103.34	4'x3' RCB	103.50	97.60	1.12
POND 5A	11-16	23.29	45.38	54.00	90.04	24" RCP	91.00	76.66	6.35
POND 4D	17, 18	29.90	24.47	22.70	82.13	8'X5'RCB, 6'X5'RCB,8'X6'RCB	82.50	70.46	2.41
POND 4A	17, 18			62.40	81.97	8'x4'RCB,4'X3'RCB	82.00	70.18	6.21
POND 4B	19	0.54		8.40	79.80	4'X4' RCB	80.00	69.21	1.14
POND 4C	20-22	34.95	34.80	59.88	71.03	8'X5', 5'X5' RCB	72.50	57.20	5.90

* Estimated storage required is equal to design storage. Design storage is based on placement logistics for ponds 6H and 6F.

Finally, the potential impact of increased water surface elevations along the corridor were mitigated with development of the 'proposed with mitigation' SWMM models. Preliminary storm drain system sizes were adjusted as necessary to accommodate 100-year conveyance within and through the US 290 right of way with no increase to existing flood elevations, while limiting the flooding to no greater than about 1' above the gutter of the preliminary frontage road profiles developed by the PMC. Water surface elevations for existing and proposed conditions are summarized in the **Hydraulics Results Summary Tables**.

3.5 Cole Creek [E117-00-00] Hydrologic and Hydraulic Analysis Results

The Cole Creek hydrologic analysis was part of the overall White Oak Bayou watershed analysis for the US 290/Hempstead Phase I and Phase II Program. The White Oak Bayou (E100-00-00) watershed HEC-HMS summaries for the 10- and 100-year frequencies are included in **Appendix D**. **Table 24** shows the revised existing and mitigated condition flows along Cole Creek [E117-00-00].

Program ponds proposed at Hempstead, Pond H1 [E517-01-00] and Pond H2 [E517-02-00], and at US 290, Ponds 5A, 5C, 6C, 6D, and 6E, will mitigate flow increases along [E117-00-00] from US 290 and Hempstead improvements. The mitigated water surface elevation comparisons (based on FEMA effective base models) are shown in **Table 25**.

The proposed Pond 5A [E517-03-00] detention facility, located downstream of US 290 along [E117-00-00] west of Fairbanks-North Houston, was optimized during this analysis to eliminate the impacts along Cole Creek [E117-00-00]. The proposed Pond 5A detention facility has a storage volume provided of 54.00 acre-feet with a

top of berm elevation of 91.00 feet. The proposed weir geometry is trapezoidal, with 5:1 side slopes, and opening length of 20 feet at elevation 88.65 feet. The proposed [E117-00-00] channel improvements are located along the length of Pond 5A, which widen the channel's northern bank by five feet. A layout of the proposed detention pond and channel improvements is shown in **Exhibit 9**.

Based on the results of the overall watershed analysis, the proposed detention facilities, channel improvements, and corresponding improvements from the US 290/Hempstead Program yield no adverse impacts to Cole Creek [E117-00-00].

4. SYSTEM SUMMARIES AND RECOMMENDATIONS

For the majority of the project reach the proposed storm sewer systems are located along the exterior edge of the frontage roads. For some of the systems, the storm sewer lines may deviate slightly from the general conditions, such as interior links along the median ditch between the mainlanes and the frontage roads. A detailed narrative of the drainage systems is presented in the following sub-sections. The recommended storm drainage system is described in this section; and in the other detailed information in this report; and attached Tables, Exhibits, and Appendices.

4.1 Outfall No. 1: White Oak Bayou [E100-00-00] (Station 2185+75)

The US 290 reach draining to this outfall extends from Telge Rd. east 1.59 miles to Huffmeister (Sta. 2122+00 to Sta. 2206+00). The US 290 storm sewer system drains to the headwaters of the [E100-00-00] stream. Therefore, the only flow entering [E100-00-00] at Outfall No. 1 comes from within the TxDOT ROW.

4.1.1 Existing Conditions

The total existing condition drainage area contributing to this outfall is 60.55 acres. The impervious cover is 62%.

The existing TxDOT drainage system draining to [E100-00-00] consists of both storm sewer and roadside ditch collectors working in conjunction. The majority of the existing roadway draining to [E100-00-00] from the west is conveyed to the outfall by roadside ditch. However, the existing westbound frontage road from Telge drains by storm sewer to station 2140+00, where it enter the frontage roadside ditch. The westbound mainlanes are also drained by storm sewer from Station 2166+50 to the [E100-00-00] outfall. The majority of the existing roadway draining to [E100-00-00] from the east is conveyed to the outfall by storm sewer. The drainage system is shown in **Exhibit 5**. This system has no detention pond.

The system conveys the runoff to the existing 5'x5' RCB near baseline station 2185+75 that discharges to White Oak Bayou [E100-00-00]. A rating curve obtained from the Revised Existing Watershed model (HEC-RAS XS *135006*) was input into SWMM as the tailwater boundary condition.

4.1.2 Proposed Conditions

The total proposed condition drainage area contributing to this outfall is 107.83 acres. The proposed project increases the impervious cover to 85%. The proposed drainage area contributing to this outfall consists of both TxDOT drainage area (US 290 ROW) and HCTRA drainage area (Hempstead Tollway). The proposed TxDOT drainage area contributing to this outfall is 73.63 acres and increases impervious cover to 77.77%. The change in the TxDOT drainage area compared to existing conditions is due to proposed road profiles and location of the proposed detention

pond. The proposed HCTRA drainage area contributing to this outfall is 34.20 acres of impervious cover. Detailed design of the HCTRA drainage system was not conducted as part of this study; however, the proposed flow assumed to be draining to the TxDOT system was taken into account for the mitigation analysis.

The proposed storm sewer system consists of two trunk line systems extending along the westbound and eastbound frontage roads, along with the existing trunk line system located between the westbound frontage road and mainlanes from station 2166+50 to 2195+50. The existing storm sewer system will continue to drain the mainlanes in proposed conditions. The proposed storm sewer drainage system is shown in **Exhibit 7**.

West of the outfall channel, the westbound lane (frontage and a portion of the mainlanes) trunk line is located along the proposed frontage road. It varies in size from 4'x2' RCB to a 6'x4' RCB to a 2-4'x4' RCB at the outfall. This system incorporates the existing 6'x3' RCB in the westbound frontage median ditch. The storm sewer trunk line for the eastbound lanes consists of 18" RCP at the upstream end of the reach to an 8'x5' RCB outfall into the upstream end of the cross culvert structure of 5'x4' RCB connecting to the dual 4'x4' outfall boxes to the outfall.

East of the outfall channel, the proposed storm sewer is located along the proposed east and westbound frontage roads. The proposed sewer varies in size from 30" RCP to 48" RCP for the westbound lanes and from 18" RCP to 30" RCP for the eastbound lanes. The westbound segment includes existing 36" to 48" RCP in the median ditch between the frontage and mainlanes. Proposed storm sewer profiles are shown in **Exhibit 8**.

To mitigate the increased flows, 46.02 ac-ft of storage volume is required. The proposed detention pond is off-site, south of the project ROW, the Union Pacific railroad, and the future Hempstead Tollway corridor. The stated volume requirement includes mitigation for the future Hempstead Tollway corridor. Mitigation uses an off-line detention configuration to divert flow from the proposed storm sewer to the pond. The proposed eastbound frontage road storm trunk line is increased to an 8'x5' RCB from the White Oak Bayou channel to the pond in order to divert flow and mitigate impacts. A 48" RCP was used to restrict the outflow into the White Oak Bayou channel. The proposed basin location and configuration is shown in **Exhibit 9**.

For computed flows in existing, proposed w/o mitigation, and proposed w/ mitigation conditions, see summary tables in **Section 3.2**. Impacts are mitigated by the storage volume within the detention pond, storm sewer, and above-ground storage on the roadway. The **Hydraulic Results Summary Tables** indicate no impact to the 100-yr water surface elevations along the storm sewer system.

4.2 Outfall No. 2: White Oak Bayou Trib. [E131-00-00] (Station 2238+00)

The US 290 reach draining to this outfall extends from Huffmeister 0.94 miles east to the intersection of US 290 and SH 6/FM 1960 (Sta. 2206+00 to Sta. 2255+50) and a segment from SH 6 extending from Hempstead to US 290 (SH 6 Sta. 123+00 to 137+50). [E131-00-00] is an unstudied tributary to White Oak Bayou [E100-00-00].

4.2.1 Existing Conditions

The total existing condition drainage area contributing to this outfall is 102.11 acres. The impervious cover is 35%. The US 290 storm sewer system drains to the headwaters of the [E131-00-00] stream. Therefore, the flow entering [E131-00-00] at Outfall No. 2 comes from within the TxDOT ROW along US 290 and SH 6/FM 1960 along with a small offsite area to the south of US 290.

This drainage system has a major trunk line draining the mainlanes and a secondary system draining the westbound frontage road.

Mainlane flows are collected in the median ditch along the westbound and eastbound lanes into area inlets that connect through lateral lines to the main trunk line. The trunk line is in the median separation ditch between the westbound frontage and mainlanes. A segment of SH 6 from Hempstead Highway north to US 290 drains through 24" and 36" RCP that connect to the 4'x4' RCB along the eastbound frontage road. The drainage areas south of US 290 are conveyed to the outfall through the 4'x4' RCB (east of the outfall) and frontage road ditch (west of the outfall). The drainage system is shown in **Exhibit 5**. This system has no detention pond.

The system conveys the runoff to the existing 2-7'x5' RCB near baseline station 2238+00 that discharges to White Oak Bayou Trib. [E131-00-00]. A rating curve obtained from a HEC-RAS model (HEC-RAS XS *1638*) developed based on survey data was input into SWMM as the tailwater boundary condition.

4.2.2 Proposed Conditions

The total proposed condition drainage area contributing to this outfall is 136.28 acres. The proposed project increases the impervious cover to 52%. The proposed drainage area contributing to this outfall consists of both TxDOT drainage area (US 290 ROW and SH 6/FM 1960 ROW) and HCTRA drainage area (Hempstead Tollway). The proposed TxDOT drainage area contributing to this outfall is 121.07 acres and increases impervious cover to 46.06%. The change in the TxDOT drainage area compared to existing conditions is due to proposed road profiles and location of the proposed detention pond. The proposed HCTRA drainage area contributing to this outfall is 15.21 acres of impervious cover. Detailed design of the HCTRA drainage system was not conducted as part of this study; however the proposed flow assumed to be draining to the TxDOT system was taken into account for the mitigation analysis.

The proposed storm sewer system consists of a trunk line system on each side of the outfall channel. The existing major trunk line located in the median separation ditch between the westbound frontage and mainlanes, and secondary system along the westbound frontage road will remain. The proposed storm sewer drainage system is shown in **Exhibit 7**.

West of [E131-00-00], the existing major trunk line located in the median separation ditch between the westbound frontage and mainlanes will continue to drain the mainlanes. The existing secondary system along the westbound frontage road will remain and continue to drain the westbound frontage road and offsite area to the north. The proposed eastbound frontage road will be drained by storm sewer. The proposed storm sewer along the eastbound frontage road varies from 18" to 54" RCP and outfalls at White Oak Bayou tributary [E131-00-00] channel.

The existing storm sewer system along SH 6 connecting to the 4'x4' RCB along the eastbound frontage road will be replaced. The proposed sewer varies in size from 24" to 54" RCP for the SH 6 southbound frontage road lanes between Hempstead and US 290.

East of [E131-00-00], the proposed storm sewer system consists of two trunk line systems extending along the westbound and eastbound frontage roads, along with the existing trunk line system located between the westbound frontage road and mainlanes from station 2238+00 to 2246+00. The proposed storm sewer system located along the proposed westbound frontage road varies in size from 30" to 48" RCP and outfalls at White Oak Bayou tributary [E131-00-00] channel. This system includes a portion of the drainage area from FM 1960 in order to mitigate the impact to the FM 1960 project ROW. The proposed storm sewer system located along the proposed eastbound frontage road varies in size from 54" at the proposed SH 6 tie in point to 5'x5' RCB and outfalls to a 7'x5' RCB at White Oak Bayou tributary [E131-00-00] channel. Proposed storm sewer profiles are shown in **Exhibit 8**.

To mitigate the increased flows, 37.60 ac-ft of storage volume is required. The proposed detention pond is off-site, south of the project ROW, the Union Pacific railroad, and the future Hempstead Tollway corridor and east of Huffmeister Road. The stated volume requirement includes mitigation for the future Hempstead Tollway corridor. Mitigation uses an off-line detention configuration to divert flow from the proposed storm sewer to the pond. The proposed eastbound frontage road storm sewer system is increased to an 8'x5' RCB from the White Oak Bayou tributary [E131-00-00] channel to Huffmeister Road. A proposed 8'x5' RCB storm sewer located along Huffmeister road drains the pond 1200' to the proposed eastbound frontage road storm sewer system. A 54" RCP restricts the outflow into the White Oak Bayou tributary channel, diverting flow to the pond. The proposed basin location and configuration is shown in **Exhibit 9**.

For computed flows in existing, proposed w/o mitigation, and proposed w/ mitigation conditions, see summary tables in **Section 3.2**. Impacts are mitigated by the storage volume within the detention Pond, storm sewer and above-ground storage on the

roadway. The **Hydraulic Results Summary Tables** indicate no impact to the 100-yr water surface elevations along the storm sewer system.

4.3 Outfall No. 3: SH 6 (Station 100+00)

The SH 6 reach draining to this outfall extends from the intersection of Hempstead Highway and SH 6 to approximately 2300' south to a point just north of Copper Grove Boulevard (Sta. 100+00 to Sta. 123+00). The proposed storm sewer system outfalls into the existing storm sewer system along SH 6 at station 100+00. The existing storm sewer continues south along SH 6 and outfalls into Horsepen Creek [U106-00-00].

4.3.1 Existing Conditions

The total existing condition drainage area contributing to this outfall is 19.60 acres, which is within the SH 6 reach south of Hempstead Highway. The onsite impervious cover is 41%.

This drainage system collects flow into area inlets that connect through lateral lines to the main trunk line along the SH 6 northbound mainlanes. The existing storm sewer for SH 6 in the project area has a siphon at station 106+50 approximately 1725' south of Hempstead Highway at two Exxon pipelines (18" and 8"). The drainage system is shown in **Exhibit 5**. This system has no detention pond.

The system conveys the runoff to the existing 72" RCP at Copper Grove Blvd. The tailwater boundary condition is calculated in the SWMM model using the normal depth analysis.

4.3.2 Proposed Conditions

The total proposed condition drainage area contributing to this outfall is 18.44 acres. The change in drainage area compared to existing conditions is due to proposed road profiles. The proposed project impervious cover is 38%.

The existing storm sewer system interferes with elements of the proposed bridge, so it cannot be used. Road profile change requires the proposed storm sewer system to have trunk line systems along both the northbound and southbound frontage roads. This allows for lateral tie-in from the proposed bridge section. The proposed drainage system is shown in **Exhibit 7**.

The southbound frontage road trunk line crosses SH 6 and ties into the proposed northbound frontage road 40' north of Copper Grove Boulevard. The proposed storm sewer system ties into the existing storm sewer system just south of Copper Grove Boulevard. Proposed storm sewer profiles are shown in **Exhibit 8**.

Hydraulic analysis indicates that the combined flows in the SH 6 proposed system downstream of Copper Grove Boulevard are less than existing, so no additional mitigation is required.

The proposed storm sewer was designed with the existing siphon under the Exxon pipelines at station 106+50 to remain.

For computed flows in existing, proposed w/o mitigation, and proposed w/ mitigation conditions, see summary tables in **Section 3.2**. The **Hydraulic Results Summary Tables** indicate no impact to the 100-yr water surface elevations along the storm sewer system.

4.4 Outfall No. 4: FM 1960 (Station 170+00)

The FM 1960 reach draining to this outfall extends from intersection of US 290 and SH 6/FM 1960 to Eldridge Parkway. The proposed project improvements extend approximately 2800' north of the US 290 and SH 6/FM 1960 intersection; therefore the existing and proposed analysis was limited to approximately 3600' north of the intersection to just south of Eldridge Parkway (Sta. 137+50 to Sta. 176+00). The proposed storm sewer system outfalls into the existing storm sewer system along FM 1960 at station 170+00. The existing storm sewer continues north along FM 1960 and outfalls into White Oak Bayou [E100-00-00].

4.4.1 Existing Conditions

The total existing condition drainage area contributing to this outfall is 28.99 acres. The impervious cover is 59%.

This drainage system collects flow into area inlets that connect through lateral lines to the main trunk line which is located along the northbound mainlanes for FM 1960. The drainage system is shown in **Exhibit 5**. This system has no detention pond.

The system conveys the runoff to the existing 6'x6' RCB downstream of Eldridge Parkway at 170+00 of FM 1960. The tailwater boundary condition is calculated in the SWMM model using the normal depth analysis.

4.4.2 Proposed Conditions

The total proposed condition drainage area contributing to this outfall is 26.55 acres. The change in drainage area compared to existing conditions is due to location of the proposed storm sewer system. The proposed project increases the impervious cover to 63%.

The proposed storm sewer system consists of two trunk line systems extending along the northbound and southbound frontage roads from US 290 and SH 6/FM 1960 intersection to approximately 2800' north. At that point the proposed storm sewer combines into one system along the northbound lanes and outfall into the existing storm sewer system. The proposed drainage system is shown in **Exhibit 7**.

The proposed storm sewer along the northbound frontage road varies from 36" RCP to a 6'x5' RCB at the existing storm sewer connection. The proposed storm sewer along the southbound frontage road varies from 36" to 48" RCP. The proposed

southbound trunk line crosses FM 1960 and connects into the northbound proposed trunk line. The proposed combined trunk line connects to the existing trunk line approximately 700' south of Eldridge Parkway. Proposed storm sewer profiles are shown in **Exhibit 8**.

The proposed storm sewer system does not cause an increase in peak discharge at the outfall, but does not address the increase in roadway ponding. In order to mitigate this impact, the flow from drainage areas C-1 and C-2 have been diverted to the Outfall No. 2 White Oak Bayou Trib. [E131-00-00] storm sewer system.

For computed flows in existing, proposed w/o mitigation, and proposed w/ mitigation conditions, see summary tables in **Section 3.2**. The **Hydraulic Results Summary Tables** indicate no impact to the 100-yr water surface elevations along the storm sewer system.

4.5 Outfall No. 5: White Oak Bayou Trib. [E112-00-00] (Station 2285+00)

The US 290 reach draining to this outfall extends from SH 6/FM 1960 to 2,000' west of Eldridge Parkway (Sta. 2255+50 to Sta. 2303+00).

4.5.1 Existing Conditions

The total existing condition drainage area contributing to this outfall is 183.03 acres. The impervious cover is 31%. The area collected by the storm sewer includes the reach from FM 1960 (on the west) to the approximate sub-watershed divide between [E112-00-00] and [E135-00-00] (on the east), near Station 2303+00.

Mainlane flows are collected in the median ditch along the westbound and eastbound lanes into area inlets that connect through lateral lines to the main trunk line. The laterals vary in size from 24" to 36" RCP. The main trunkline varies in size from 30" to 48" RCP. The two main storm sewer systems connect from the east and west into the existing 9'x 5' RCB crossing.

Between SH 6 and the intersection of US 290 and Hempstead Highway, the eastbound frontage drains into a roadside ditch that connects to the existing system across US 290 and to the outfall.

The existing roadside ditch network generally consists of four open ditches, two each side of the centerline, and two that drain the frontage roads and/or ROW side of the corridor. The ditches vary in depth, bottom width, and top width. Additionally, the Hempstead roadside ditches, both westbound and eastbound, are conveyed through ditches to this outfall. An existing 3'x2' RCB crossing is located just east of SH 6 and crosses under Hempstead Rd. conveying the ditch flow from the south ditch to the north ditch.

Both east and west systems convey the runoff to the existing 10'x5' RCB that discharges to White Oak Bayou Trib. [E112-00-00]. The tailwater boundary condition is calculated in the SWMM model using the normal depth analysis.

4.5.2 Proposed Conditions

The total proposed condition drainage area contributing to this outfall is 233.68 acres. The change in drainage area compared to existing conditions is due to proposed road grades, location of proposed storm sewer system, and the additional flow entering the system to account for the proposed Hempstead Tollway. The proposed project increases the impervious cover to 40%.

The proposed drainage system consists of trunk lines east and west of the outfall. The trunk lines extend along the curb line of the westbound and eastbound frontage roads. West of the outfall, the westbound storm sewer trunk line varies from 30" RCP to 6'x3' RCB and the eastbound storm sewer trunk line varies from 24" RCP to 7'x5' RCB terminating at the 9'x5' RCB cross structure. For the area east of the outfall, the westbound storm sewer trunk line varies from 36" RCP to 5'x3' RCB and the eastbound storm sewer trunk line varies from 24" RCP to 30" RCP. Proposed storm sewer profiles are shown in **Exhibit 8**.

To mitigate the increased flows, 34.40 ac-ft of storage volume is required. The proposed detention pond, Pond 8C, is located south of US 290 and east of the outfall and includes a 6.01 acre site. Mitigation uses an off-line detention configuration to divert flow from the proposed storm sewer to the pond. The proposed basin location and configuration is shown in **Exhibit 9**.

For computed flows in existing, proposed w/o mitigation, and proposed w/ mitigation conditions, see summary tables in **Section 3.2**. Impacts are mitigated by the detention pond, storage volume within the storm sewer and above-ground storage on the roadway. The **Hydraulic Results Summary Tables** indicate no impact to the 100-yr water surface elevations along the storm sewer system.

4.6 Outfall No. 6: White Oak Bayou Trib. [E135-00-00] (Station 2349+50)

The US 290 reach draining to this outfall extends from 2,000' west of Eldridge Parkway to 400' west of Steeple Way Blvd (Sta. 2303+00 to Sta. 2361+00).

4.6.1 Existing Conditions

The total proposed condition drainage area contributing to this outfall is 179.73 acres. The average impervious cover is 36%.

The offsite flow for this system was obtained from modified FEMA effective models (HEC-HMS) for [E135-00-00]. In those models, the sub-area size and TC&R values are adjusted to represent only the area of interest.

This outfall receives three separate storm sewer systems. The largest system is comprised of RCP and RCB that range from 18" RCP to 6'x6' RCB. This system receives drainage from the approximate sub-watershed divide near Station 2303+00 to the outfall channel. The second system consists of 18" RCP and drains a relatively

small area just west of the outfall. The third system varies from 18" to 36" RCP and drains the area from the outfall channel east to the outfall west watershed limits.

The existing roadside ditch network consists of four open ditches - two each side of the centerline and two that drain the eastbound frontage roads and the ROW side of the corridor. The ditches vary in depth, bottom width, and top width.

This system has an existing detention pond south of US 290 located at approximate Sta. 2345+00. The existing detention pond provided 58.47 ac-feet of storage.

The system conveys the runoff to the existing bridge structure near baseline station 2349+50 that discharges to White Oak Bayou Trib. [E135-00-00]. A rating curve obtained from the Revised Existing Watershed model was input into SWMM as the tailwater boundary condition.

4.6.2 Proposed Conditions

The total proposed condition drainage area contributing to this outfall is 192.93 acres. The change in drainage area compared to existing conditions is due to proposed road profiles, location of proposed storm sewer system, and the additional flow entering the system to account for the proposed Hempstead Tollway. The proposed project increases the impervious cover to 65%.

The proposed drainage system consists of trunk lines east and west of the outfall that will replace the existing storm sewer system. The trunk lines extend along the curb line of the westbound and eastbound frontage roads. West of the outfall, the westbound storm sewer trunk line varies from 36" RCP to 7'x4' RCB and the eastbound storm sewer trunk line varies from 36" RCP to 5'x3' RCB terminating at the channel crossing. For the area east of the outfall, the westbound storm sewer trunk line varies in size from 42" RCP to 5'x4' RCB, the eastbound storm sewer trunk line varies in size from 24" RCP to 42" RCP. Proposed storm sewer profiles are shown in **Exhibit 8**.

To mitigate the increased flows, 115.40 ac-feet of storage volume is required. Detention Pond 7A2 is proposed for this outfall. A portion of the storage located in the existing pond (Pond 7A1) will be lost due to the location of the proposed Hempstead Tollway. Pond 7A2 has been expanded to account for the storage lost in the existing pond and the additional flow from outfall 7. The proposed basin location and configuration is shown in **Exhibit 9**.

The proposed mitigation uses an off-line detention configuration to divert flow from the E135-00-00 channel to the proposed ponds. Pond 7A1 weir location and geometry has changed from existing to proposed due to the location of the proposed Hempstead Tollway. The existing weir is located along the proposed Hempstead Tollway alignment. The proposed weir geometry for Pond 7A1 is trapezoidal in shape with a 30-foot bottom width at an elevation of 112.00. The proposed weir geometry for Pond 7A2 is trapezoidal in shape with a 50-foot bottom width at an elevation of 110.00.

For computed flows in existing, proposed w/o mitigation, and proposed w/ mitigation conditions, see summary tables in **Section 3.2**. Impacts are mitigated by the storage volume within the detention Pond, storm sewer and above-ground storage on the roadway. The **Hydraulic Results Summary Tables** indicate no impact to the 100-yr water surface elevations along the storm sewer system.

4.7 Outfall No. 7: White Oak Bayou Trib. [E127-00-00] (Station 2409+50)

The outfall for system "C", designated as Outfall No. 7, is located on HCFCD Unit No. [E127-00-00]. The corresponding baseline station of the outfall is approximately 2409+50. The drainage area begins 400' west of Steeple Way and extends east to FM529 (Sta. 2361+00 to Sta. 2456+50).

4.7.1 Existing Conditions

The total existing drainage area contributing to this outfall is 119.84 acres. The onsite impervious cover is 62%. **Exhibit 5** shows the existing drainage area map.

The offsite flows for the area upstream of UPRR are obtained from the FEMA effective model (HEC-HMS) for [E127-00-00]. Adjusting the area and TC&R values for sub-area E135A determines the inflow hydrograph entering the ROW of US 290. All other drainage areas were calculated using the rational method.

The existing drainage system for this outfall consists of storm sewers and open ditches conveying storm water to the bridge section of US 290 and [E127-00-00]. Storm sewer sizes range from an 18" RCP to a 7'x 4' RCB. The main trunk line is located between the westbound frontage and mainlanes. Lateral storm sewers convey flow between the ROW and westbound frontage to the trunk line. The east bound frontage consists of curb inlets outfalling into open ditches. These open ditches convey the flow to [E127-00-00]. The layout of the existing storm sewer system is shown on **Exhibit 5**.

The existing SWMM model connects all of the drainage features located within the drainage area and incorporates the FEMA effective model with a rating curve for the downstream tailwater boundary condition. The rating curve was developed using cross section 7185 from the FEMA effective model for [E127-00-00].

4.7.2 Proposed Conditions

The total proposed condition drainage area contributing to this outfall is 73.55 acres. The change in drainage area compared to existing conditions is due to proposed road profiles and location of proposed storm sewer system. In addition to the change in profiles, some of the existing drainage areas shift to Outfall No. 6 and Outfall No. 8. The areas from Hempstead Tollway will not be routed to [E127-00-00]. Hempstead Tollway areas to the west of [E127-00-00] will be routed to Detention Pond 7A and the areas to the east of [E127-00-00] will be routed to Detention Pond 7B. The proposed project increases the impervious cover to 64%.

The design for the storm sewer for this outfall has identified some special considerations. The FM 529 drainage system abuts the boundary between systems defined by Outfall No. 7 and 8. This system drains the depressed section of FM 529. The overall US 290 improvements will result in reduced discharge into this system; therefore, no analysis was conducted. Also, the proposed Hempstead Tollway may result in the requirement to relocate the pump station located at the southwestern corner of the intersection. Analysis and design for this system is outside of the study scope.

West of the outfall channel, the westbound lane (frontage and mainlanes) storm sewer is in the proposed frontage road. The proposed trunk line varies from 8'x5' RCB" to a 4'x4' RCB. The trunk line for the eastbound lanes is located in the proposed frontage road, and varies from 6'x4' RCB to 4'x4' RCB.

East of the outfall, the proposed storm sewer is in the proposed eastbound and westbound frontage roads. The proposed trunk line varies from 4'x4' RCB to a 7'x4' RCB for the westbound lanes and 48" RCP to a 36" RCP for the eastbound lanes. Proposed storm sewer profiles are shown in **Exhibit 8**.

Due to the limited detention sites available, no offsite detention is provided for the proposed storm sewer system. All flows will be mitigated within the storm sewer system in conjunction with the detention provided at Outfall No. 8. The proposed drainage area remained approximately the same as existing conditions while incorporating the Hempstead Tollway area. This is achieved by diverting drainage areas to Outfall No. 8 which incorporates multiple ponds for mitigation.

For computed flows in existing, proposed w/o mitigation, and proposed w/ mitigation conditions, see summary tables in **Section 3.2**. The **Hydraulic Results Summary Tables** indicate no increase to the 100-yr water surface elevations along the storm sewer system.

4.8 Outfall No. 8: Beltway 8 System [to White Oak Bayou Trib. E139-00-00] (Station 2508+00)

The outfall for system "D", designated as Outfall No. 8, is located at the Beltway 8 and US 290. The system drains into [E139-00-00] at approximate baseline station 2508+00. The drainage area begins at FM 529 and extends 1,300' east of the Beltway 8 (Sta. 2456+50 to Sta. 2518+00).

4.8.1 Existing Conditions

The total existing drainage area contributing to this outfall is 141.93 acres. The impervious cover is 48%. **Exhibit 5** shows the existing drainage area map.

The main trunk line for the existing storm sewer runs behind the westbound frontage road and transitions under the pavement where it drains to [E139-00-00]. The storm sewer consists of many interconnected systems which convey flow to the existing

trunk line. The storm sewer ranges from 18" laterals to 2-8'x8' RCB's at the confluence. The storm water enters the trunk line though a complex system of roadside ditches, area inlets, and curb inlets.

A pump station exists at Senate Avenue. The flow from this pump station is accounted as a user input hydrograph for the drainage area. Large drainage areas are located around the Beltway 8 and US 290 intersection. These areas are predominately grass where minor ponding can occur. However, no detention ponds reside in the area.

4.8.2 Proposed Conditions

The total proposed drainage area contributing to this outfall is 250.04 acres. The change in drainage area compared to existing conditions is due the additional area from Outfall No. 7 and the Hempstead Tollway, proposed road profiles, and location of proposed storm sewer system. The proposed project increases the impervious cover to 66%.

The proposed storm sewer system consists of trunk lines on westbound and eastbound frontage roads. The eastbound frontage is restricted at the intersection of FM 529 and Senate Avenue. At these locations, the eastbound frontage road trunk line crosses the mainlanes and merges with the westbound frontage road trunk line. The proposed storm sewer for the eastbound frontage road trunk line ranges from a 36" RCP to a 72" RCP near the Beltway 8 intersection.

Four mainlane crossings are proposed to connect the eastbound frontage road trunk line with the westbound frontage road trunk line. The four crossings are approximately located at baseline stations 2446+22, 2477+87, 2500+97, and 2511+20. The sizes are 8'x5' RCB, 6'x4' RCB, 8'x4' RCB, 72" RCP, respectively. The outfall into [E139-00-00] consists of 2-8'x8' RCB's. Proposed storm sewer profiles are shown in **Exhibit 8**.

The design for the storm sewer for this outfall has identified some special considerations. This system reach is intersected by Senate Avenue drainage system. The proposed US 290 improvement will not result in any additional discharge into this system; therefore, no hydrologic impacts will be evident in this system. The noted impact will be in the requirement to relocate the existing pump station situated at the southwest corner of the intersection due to the frontage road widening.

The mitigation for this outfall occurs at three locations within the storm sewer system for Outfall No. 8. The three ponds are identified as Pond 6A, 6B, and 7B. These pond locations are identified in **Exhibit 7** and detailed in **Exhibit 9**.

Detention pond 7B is located approximately at baseline station 2446+00 on the west side of US 290. It consists of an area of 9.2 acres with a bottom elevation of 95. The total detention provided is 56.46 acre-feet. The storm sewer system enters the detention basin through an 8'x5' RCB.

Detention pond 6A is located approximately at baseline station 2495+00 on the west side of US 290. It consists of an area of 10.03 acres with a bottom elevation of 91.00. The total detention provided is 92.40 acre-feet. The storm sewer system enters the detention basin through an 8'x4' RCB and a 6'x3' RCB. The detention drains though the 8'x4' RCB.

Detention pond 6B is located approximately at baseline station 2513+00 on the east side of US 290 near the Beltway 8 intersection. It consists of an area of 1.21 acres with a bottom elevation of 88.00. The total detention provided is 9.20 acre-feet. The storm sewer system enters the detention basin through a 6'x6' RCB RCB and drains though a 9'x6' RCB.

The combinations of the three detention basins fully mitigate Outfall No. 8 and Outfall No. 7 to existing conditions. It is important to note that, for the routing analysis of Outfall No. 8, the tailwater established was based on the controlling backwater effect of White Oak Bayou through its tributary [E139-00-00]. The HEC-HMS program was used to determine the relationship between the local area and the White Oak Bayou watershed. The resulting tailwater elevation was determined to be 102.88 which includes a 0.63 adjustment to convert the FEMA effective model elevations to the project datum. However, improvements are being implemented to White Oak Bayou. These improvements along with the LOMR are not accounted for and could influence the tailwater conditions when the models become effective.

For computed flows in existing, proposed w/o mitigation, and proposed w/ mitigation conditions, see summary tables in **Section 3.2**. Impacts are mitigated by the storage volume within the detention pond, storm sewer and above-ground storage on the roadway. The **Hydraulic Results Summary Tables** indicate no increase to the 100-yr water surface elevations along the storm sewer system. Based on this analysis, the three detention basins mitigate the increased flows for the project area.

4.9 Outfall No. 8A/8B: Beltway 8 South System [to Cole Creek E117-00-00] (Station 100+00 Beltway 8)

These outfalls, designated as Outfall No. 8A, and a small parallel system designated as Outfall No. 8B, are located in the area of the Beltway 8 South crossover of the Senate Avenue/West Little York intersection. The system drains south into Cole Creek [E117-00-00], which is located approximately 2,000 feet along Beltway 8 South from the Senate Avenue/West Little York intersection. Outfalls 8A and 8B are located approximately 700 feet north of Cole Creek along Beltway 8. The drainage area begins approximately 2,700 feet north of the Beltway 8 crossover of the Senate Avenue/West Little York intersection along Senate Avenue. It extends east to near the Beltway 8 crossover at Hempstead Road, then runs generally southwest following the northbound lanes of Beltway 8 until again reaching the area around the Senate Avenue/West Little York intersection. The drainage area includes the triangle area bounded by Senate Avenue, Hempstead Highway and Beltway 8.

4.9.1 Existing Conditions

The total existing drainage area contributing to these outfalls is 56.28 acres. The impervious cover is 59%. **Exhibit 5** shows the existing drainage area map.

The primary conveyance for the existing storm sewer is an open channel running along the Senate Avenue median. From approximately West Little York and southward there is a trunk line to the west parallel to Beltway 8 that outfalls at 8A. There are numerous laterals connecting to the open channel and trunk line along Senate Avenue and Beltway 8, respectively. A smaller parallel system runs along the east side of Beltway 8 south of West Little York and outfalls at 8B.

4.9.2 Proposed Conditions

The total proposed drainage area contributing to these outfalls is 57.42 acres. The marginal change in drainage area is due primarily to an increased right-of-way from which drainage is collected along the proposed NB Frontage road for Beltway 8. The Outfall 8A system receives the overall drainage area increase and also the small amount diverted from 8B into Pond 6H. The proposed project increases the impervious cover to 63%.

The proposed storm sewer system consists of trunk lines on the northbound and southbound Beltway 8 frontage roads. Both systems are 3'x3' RCBs. Both of these systems are directed into Pond 6H. The drainage systems north along Senate Avenue will be modified where necessary to accommodate the two Ponds 6H and 6F, that will be constructed for mitigation, and the re-routing of Senate Avenue across Beltway 8. There is no change anticipated in the system south along Beltway 8 below West Little York as it conveys flow towards Cole Creek. The drainage from north along Senate Avenue will be directed to Pond 6H. There is a small amount of drainage to the west and along Senate Avenue that will be directed to Pond 6F. Proposed storm sewer profiles are shown in **Exhibit 8**.

The mitigation for Outfall No. 8A occurs at two pond locations within the storm sewer system. The two ponds are identified as Ponds 6H and 6F. These pond locations are identified in **Exhibit 7** and detailed in **Exhibit 9**. Outfall 8B does not require mitigation.

Detention Pond 6H is located underneath Beltway 8 South just north of West Little York and will be constructed around the existing bents. It consists of an area of 2.39 acres with a bottom elevation of 96.39. The total detention provided is 9.22 acre-feet. Inflow to the pond is through: 1) a 7'x3' RCB (from system D1 and existing Senate Avenue drainage), 2) a 4'x3' RCB (from system D2), 3) a 3'x2' RCB (additional drainage from northbound Beltway 8 frontage), 4) a 24" RCP (local drainage), and; 5) a 4'x3' RCB (flow from pond 6F). Flow exits the pond for conveyance through the downstream system to Outfall 8A through a 6'x 4 RCB.

Detention Pond 6F is located adjacent to and northwest of Pond 6H. It consists of an area of 1.12 acres with a bottom elevation of 97.6. The total detention provided is

3.01 acre-feet. Inflow to the pond is from local drainage and is conveyed into the pond by: 1) a 4'x2' RCB. 2) a 24" RCP, and; 3) an additional 24" RCP. Flow exits the pond for conveyance to Pond 6H through a 4'x3' RCB.

The combinations of the two detention basins fully mitigate Outfall No. 8A to existing conditions. Note that proposed (unmitigated) flows are less than existing. Mitigation is required for elevation impacts, and not flow impacts, to offset loss of storage in the upstream system. Mitigation for Outfall No. 8B is not required. It is important to note that, for the routing analysis to both of the outfalls, normal depth is specified as the downstream boundary condition. This is based on the following factors: 1) there is no detailed FEMA study for the Cole Creek/Beltway 8 crossing (Zone A), 2) the limitations of project area and scope preclude extension of the Cole Creek detailed study to the Beltway 8 crossing (a distance of approximately 1,500 feet), and; 3) normal depth is below grade at the Outfalls location, and it is highly probable that a Cole Creek tailwater elevation is as well. Normal depth was assessed as a representative downstream boundary condition.

For computed flows in existing, proposed w/o mitigation, and proposed w/ mitigation conditions, see summary tables in **Section 3.2**. Impacts are mitigated by the storage volume within the detention pond, storm sewer and above-ground storage on the roadway. The **Hydraulic Results Summary Tables** indicate some slight increases to the 100-yr water surface elevations along the storm sewer system in the most upstream parts of the Senate Avenue system. These increases are contained within the ROW and do not impact adjacent properties. Based on this analysis, the two detention basins mitigate the increased impervious area for the project area.

4.10 Outfall No. 9: Cole Creek [E117-00-00] (Station 2551+50)

The US 290 reach draining to this outfall extends from 1,200' east of Beltway 8 to Cole Creek (Sta. 2517+00 to Sta. 2551+00).

4.10.1 Existing Conditions

The total existing condition drainage area contributing to this outfall is 205.46 acres. The onsite impervious cover is 45%.

The U.S. Army Corps of Engineers' program HEC-HMS (version 3.1.0) was utilized for the hydrologic analysis of the offsite flows. The HEC-HMS model from the FEMA effective study for White Oak Bayou was used as the basis to create the HEC-HMS model for [E117-00-00] offsite flows. The E117A drainage area was sub-divided into two smaller areas in order to develop offsite hydrographs for the area upstream of Hempstead and the area between Hempstead and US 290. In the new model, the sub-area size, and TC&R values are adjusted to represent only the upstream offsite areas. The offsite areas were modeled within the Hempstead SWMM model. The downstream outflow hydrograph from the Hempstead model was used as the upstream inflow hydrograph in the US 290 model.

The existing TxDOT drainage system draining to Cole Creek [E117-00-00] consists of one major trunk line that is located in the median separation ditch between the westbound frontage and mainlanes. Westbound mainlane flows are collected in the median ditch into area inlets. Westbound frontage road flows are collected in curb inlets. For the area south of US 290 centerline, the eastbound mainlanes drain to median ditches between the mainlane and frontage and the frontage road drains into curb inlets. Laterals are used to carry the flows from the area inlets to the trunk line. The trunk line varies from 30" to 90" RCP. The existing drainage system is shown in **Exhibit 5**. This system has no detention pond.

The system conveys the runoff to Cole Creek [E117-00-00] near baseline station 2551+50. A rating curve obtained from the Revised Existing Watershed model (HEC-RAS XS 29094) was input into SWMM as the tailwater boundary condition.

4.10.2 Proposed Conditions

The total proposed condition drainage area contributing to this outfall is 202.93 acres. The change in drainage area compared to existing conditions is due to proposed road profiles and location of proposed storm sewer system. The proposed project increases the impervious cover to 55%.

This is a unique outfall system where the proposed sewer systems are located to the west side of the outfall; only a small area immediately to the east south of the US 290 centerline drains to Outfall No. 9. The majority of the area directly to the east drains in an easterly direction to adjacent Outfall No. 10. The proposed drainage system is shown in **Exhibit 7**.

The proposed storm sewer system consists of two trunk line systems extending along the westbound and eastbound frontage roads. The westbound trunk line varies in size from 24" RCP to 9'x5' RCB. The eastbound trunk line varies in size from 36" RCP to 5'x5' RCB. Proposed storm sewer profiles are shown in **Exhibit 8**.

Flows are over mitigated within the proposed Hempstead ponds in order to aid in the mitigation at US 290. However, due to new development, part of the pond at Hempstead identified in the ESA is no longer feasible for detention. This reduction in pond size has created a 158 cfs impact at US 290. Additional mitigation for this outfall occurs at four locations within the storm sewer system for Outfall No. 9. The four ponds are identified as Pond 5C, 6C, 6D, and 6E. These pond locations are identified in **Exhibit 7** and detailed in **Exhibit 9**.

Detention pond 5C is located approximately at baseline station 2550+00 on the north side of US 290. It consists of an area of 0.74 acres with a bottom elevation of 84.96 and top elevation of 93.50. The total detention provided is 4.36 acre-feet. The storm sewer system enters and exits the detention basin through a 36" RCP.

Detention pond 6C is located approximately at baseline station 2533+00 on the north side of US 290 underneath the proposed West Little York bridge. It consists of an

area of 1.61 acres with a bottom elevation of 88.10 and top elevation of 95.00. The total detention provided is 10.45 acre-feet. The storm sewer system enters and exits the detention basin through a 36" RCP.

Detention pond 6D is located approximately at baseline station 2531+00 on the south side of US 290 underneath the proposed West Little York bridge. It consists of an area of 1.01 acres with a bottom elevation of 88.23 and top elevation of 95.00. The total detention provided is 4.83 acre-feet. The storm sewer system enters and exits the detention basin through a 36" RCP.

Detention pond 6E is located approximately at baseline station 2525+00 on the south side of US 290 just west of West Little York. It consists of an area of 6.41 acres with a bottom elevation of 89.42 and top elevation of 98.00. The total detention provided is 23.97 acre-feet. The storm sewer system enters and exits the detention basin through a 5'x4' RCB.

The design for the storm sewer for this outfall has identified some special considerations. An existing Offsite storm sewer system conveys flows from Gessner to [E117-00-00]. The existing storm sewer is located within the proposed TxDOT ROW. The location and elevation of this existing system will need to be verified and may affect the trunk line placement along the eastbound frontage road between [E117-00-00] and Gessner. The proposed US 290 eastbound frontage road alignment conflicts with the existing culverts along [E117-00-00] to the north of US 290. For this analysis it was assumed the existing culvert would be shortened and that the US 290 frontage roads and mainlanes would cross over [E117-00-00] as separate bridges. A detailed hydraulic analysis will be completed on [E117-00-00] as a separate report, once the preliminary design has been completed.

For computed flows in existing, proposed w/o mitigation, and proposed w/ mitigation conditions, see summary tables in **Section 3.2**. Impacts are mitigated by the storage volume within the detention ponds, storm sewer, and above-ground storage on the roadway. The **Hydraulic Results Summary Tables** indicate no impact to the 100-yr water surface elevations along the storm sewer system. Based on this analysis, the four detention basins mitigate the increased flows for the project area.

4.11 Outfall No. 10: Gessner Dr. System [to Cole Creek] (Station 2557+00)

The US 290 reach draining to this outfall extends from Cole Creek to 1200' west of Gessner Drive (Sta. 2551+00 to Sta. 2570+00).

4.11.1 Existing Conditions

The total existing condition drainage area contributing to this outfall is 8.57 acres. The average impervious cover is 59%. Due to the proximity of Outfall 9 and Outfall 10 these two Outfalls were modeled together, in order to determine the effects on Cole Creek [E117-00-00].

This a small drainage system that consists of storm sewer links with no major trunk line. The interconnected storm sewer lines drain the intersection through the existing 66" RCP along N. Gessner Drive which ultimately discharges to Cole Creek, approximately 150' north of the intersection. These intersection links vary in size from 18" to 48" RCP. The existing drainage layout is shown in **Exhibit 5**. This system has no detention pond.

The system conveys the runoff to the existing 66" RCP near baseline station 2557+00 that discharges to the Gessner Dr. System [to Cole Creek]. A rating curve obtained from the Revised Existing Watershed model (HEC-RAS XS *29094*) was input into SWMM as the tailwater boundary condition.

4.11.2 Proposed Conditions

The total proposed condition drainage area contributing to this outfall is 14.18 acres. The change in drainage area compared to existing conditions is due to proposed road grades and location of proposed storm sewer system. The proposed project increases the impervious cover to 82%.

The proposed storm sewer system consists of two trunk line systems extending along the westbound and eastbound frontage roads. West of the outfall, the flow along the westbound and eastbound frontage roads drain through a 30" RCP to the proposed 7'x6' RCB at Gessner. East of the outfall, the westbound trunk line varies in size from 24" to 48" RCP. The eastbound trunk line varies in size from 24" RCP to 5'x3' RCB. The proposed drainage system is shown in **Exhibit 7**. Proposed storm sewer profiles are shown in **Exhibit 8**.

The mitigation for Outfall No. 10 is analyzed in SWMM with Outfall No. 9. As stated previously, four additional detention pond locations are recommended within the Outfall No. 9 storm sewer system to mitigate the increase in flows at [E117-00-00]. The four ponds are identified as Pond 5C, 6C, 6D, and 6E. These pond locations are identified in **Exhibit 7** and detailed in **Exhibit 9**.

For computed flows in existing, proposed w/o mitigation, and proposed w/ mitigation conditions, see summary tables in **Section 3.2**. Impacts in flow are mitigated by the storage volume within the detention ponds, storm sewer, and above-ground storage on the roadway. The **Hydraulic Results Summary Tables** indicate no impact to the 100-yr water surface elevations along the storm sewer system.

4.12 Outfall No. 11: Cole Creek Trib. [E117-07-00] (Station 2586+00)

The US 290 reach draining to this outfall extends from 1200' east of Gessner Dr. to 600' east of Cole Creek Tributary (Sta. 2570+00 to Sta. 2590+00).

4.12.1 Existing Conditions

The total existing condition drainage area contributing to this outfall is 30.63 acres. The impervious cover is 56%.

HEC-HMS (version 3.1.0) was utilized for the hydrologic analysis of the offsite flows. The HEC-HMS model from the FEMA effective study for White Oak Bayou was used as the basis to create the HEC-HMS model for [E117-00-00] offsite flows. The E117A drainage area was sub-divided into two smaller areas in order to develop offsite hydrographs for the area upstream of Hempstead and the area between Hempstead and US 290. In the new model, the sub-area size, and TC&R values are adjusted to represent only the upstream offsite areas. The offsite upstream of Hempstead was modeled within the Hempstead SWMM model. The downstream outflow hydrograph from the Hempstead model was combined with the hydrograph between Hempstead and US 290, in order to develop the upstream inflow hydrograph in the US 290 model.

The existing TxDOT drainage system draining to Cole Creek Trib. [E117-07-00] consists of one major trunk line that is located in the median separation ditch between the westbound frontage and mainlanes. Westbound mainlane flows are collected in the median ditch into area inlets. Westbound frontage road flows are collected in curb inlets. For the area south of US 290 centerline, the eastbound mainlanes drain to median ditches between the mainlane and frontage and the frontage road drains into curb inlets. Laterals are used to carry the flows from the area inlets to the trunk line. The trunk line varies from 18" to 54" RCP. The drainage system is shown in **Exhibit 5**. This system has no detention pond.

The system conveys the runoff to Cole Creek Trib. [E117-07-00] near baseline station 2586+00. A time stage hydrograph developed from the Revised Existing Watershed models was input into SWMM as the tailwater boundary condition.

4.12.2 Proposed Conditions

The total proposed condition drainage area contributing to this outfall is 26.90 acres. The change in drainage area compared to existing conditions is due to proposed road grades and location of proposed storm sewer system. The proposed project increases the impervious cover to 69%.

The proposed storm sewer system consists of two trunk line systems extending along the westbound and eastbound frontage roads. West of the outfall, the trunk line varies from 24" to 5'x3' RCB along the westbound frontage and from 24" RCP to 4'x3' RCB along the eastbound frontage. East of the outfall, the trunk line varies from 24" to 30" RCP along the westbound lanes and 4'x3' to 5'x3' RCB along the eastbound lanes. The proposed drainage system is shown in **Exhibit 7**. Proposed storm sewer profiles are shown in **Exhibit 8**.

Outfall No. 11 through Outfall No. 16 drain to Cole Creek [E117-00-00], which runs parallel to US 290. Due to lack of available land it was not feasible to mitigate the increase in flows at these outfalls. Therefore, mitigation was placed along Cole Creek [E117-00-00] in order to mitigate the increase in flows from Outfall No. 11 through Outfall No. 16. An overall watershed analysis was conducted on [E117-00-00] and is discussed in detail in Sections 2.5 and 3.5. The mitigation analysis

conducted within SWMM for these outfalls show increases in flow; however, any increases to the 100-yr water surface elevations along the storm sewer were mitigated.

The design for the storm sewer for this outfall has identified some special considerations. An existing storm sewer system enters the TxDOT drainage system at West By Northwest Boulevard. The flowline of this existing storm sewer system controls the proposed eastbound frontage road storm sewer location and should be verified during design. The existing storm sewer outfalls at Cole Creek Trib. [E117-07-00] below the channel flowline into a bubble chamber. Due to the elevation of the existing storm sewer at West By Northwest Boulevard, the proposed storm sewer outfalls at Cole Creek Trib. [E117-07-00] below the channel flowline. Therefore, channel improvements are proposed along [E117-07-00] from the upstream ROW of US 290 to Cole Creek, approximately 970 feet. The proposed channel improvements are trapezoidal in shape with a 10-foot bottom width, 3-to-1 side slopes, a 0.10% flowline slope, and 15-foot maintenance berms. The proposed channel improvements utilize the 50-foot HCFCD easement and an additional 60 feet of ROW is required.

For computed flows in existing, proposed w/o mitigation, and proposed w/ mitigation conditions, see summary tables in **Section 3.2**. Impacts in flow are mitigated by the storage volume within the detention pond located along [E117-00-00]. See Section 3.5 for the watershed mitigation analysis results. Impacts in water surface elevation are mitigated by the storage volume with in the storm sewer and above-ground storage on the roadway. The **Hydraulic Results Summary Tables** indicate no impact to the 100-yr water surface elevations along the storm sewer system.

4.13 Outfall No. 12: Outlet Ditch to Cole Creek (Station 2595+25)

The US 290 reach draining to this outfall extends from 600’ east of Cole Creek Tributary to 1300’ west of Fairbanks-North Houston Road (Sta. 2590+00 to Sta. 2605+00).

4.13.1 Existing Conditions

The total existing condition drainage area contributing to this outfall is 53.61 acres. The impervious cover is 54%.

The existing TxDOT drainage system draining to Outfall No. 12 consists of one major trunk line that is located in the median separation ditch between the westbound frontage and mainlanes. Westbound mainlane flows are collected in the median ditch into area inlets. Westbound frontage road flows are collected in curb inlets. For the area south of US 290 centerline, the eastbound mainlanes drain to median ditches between the mainlane and frontage and the frontage road drains into curb inlets. Laterals are used to carry the flows from the area inlets to the trunk line. The trunk line varies from 30” to 48” RCP. The drainage system is shown in **Exhibit 5**. This system has no detention pond.

The system conveys the runoff to the existing 78" RCP near baseline station 2595+25 that discharges to the Outlet Ditch to Cole Creek. A time stage hydrograph developed from the Revised Existing Watershed models was input into SWMM as the tailwater boundary condition.

4.13.2 Proposed Conditions

The total proposed condition drainage area contributing to this outfall is 53.66 acres. The change in drainage area compared to existing conditions is due to proposed road grades and location of proposed storm sewer system. The proposed project increases the impervious cover to 60%.

The proposed storm sewer system consists of two trunk line systems extending along the westbound and eastbound frontage roads. West of the outfall, the trunk line varies from 24" to 36" RCP along the westbound frontage and from 24" to 36" RCP along the eastbound frontage. East of the outfall, the trunk line varies from 24" to 36" RCP along the westbound lanes and 36" RCP to 4'x3' RCB along the eastbound lanes. The proposed storm sewer trunk line systems outfall into 2-5'x3' RCB at the outfall. The proposed drainage system is shown in **Exhibit 7**. Proposed storm sewer profiles are shown in **Exhibit 8**.

Outfall No. 11 through Outfall No. 16 drain to Cole Creek [E117-00-00], which runs parallel to US 290. Due to lack of available land it was not feasible to mitigate the increase in flows at these outfalls. Therefore, mitigation was placed along Cole Creek [E117-00-00] in order to mitigate the increase in flows from Outfall No. 11 through Outfall No. 16. An overall watershed analysis was conducted on [E117-00-00] and is discussed in detail in Sections 2.5 and 3.5. The mitigation analysis conducted within SWMM for these outfalls show increases in flow; however, any increases to the 100-yr water surface elevations along the storm sewer were mitigated.

The design for the storm sewer for this outfall has identified some special considerations. There is an offsite storm sewer system that enters the system at the outfall upstream of US 290. This flow is conveyed to the channel downstream by the 2-5'x3' RCB. The existing storm sewer flowline at the outfall channel is lower than the channel invert. The existing channel has a drop structure just north of the US 290 ROW, in order to allow the existing storm sewer to outfall at a lower elevation. The proposed storm sewer outfalls below the existing channel flowline; therefore, channel improvements are proposed from the storm sewer outfall to Cole Creek, approximately 300 feet. The proposed channel improvements are trapezoidal in shape with a 6-foot bottom width, 3-to-1 side slopes, a 0.10% flowline slope, and 15-foot maintenance berms. The proposed channel improvements utilize the 50-foot Harris County ROW and an additional 30 feet of ROW is required.

For computed flows in existing, proposed w/o mitigation, and proposed w/ mitigation conditions, see summary tables in **Section 3.2**. Impacts in flow are mitigated by the storage volume within the detention pond located along [E117-00-00]. See Section

3.5 for the watershed mitigation analysis results. Impacts in water surface elevation are mitigated by the storage volume with in the storm sewer and above-ground storage on the roadway. The **Hydraulic Results Summary Tables** indicate no impact to the 100-yr water surface elevations along the storm sewer system.

4.14 Outfall No. 13: Fairbanks N. Houston System (Station 2616+00)

The US 290 reach draining to this outfall extends from 1300' west of Fairbanks-North Houston Road to 500' west of Flintrock Rd. (Sta. 2605+00 to Sta. 2629+00).

4.14.1 Existing Conditions

The total existing condition drainage area contributing to this outfall is 25.65 acres. The impervious cover is 63%.

HEC-HMS (version 3.1.0) was utilized for the hydrologic analysis of the offsite flows. The HEC-HMS model from the FEMA effective study for White Oak Bayou was used as the basis to create the HEC-HMS model for [E117-00-00] offsite flows. The E117A drainage area was sub-divided into two smaller areas in order to develop offsite hydrographs for the area upstream of Hempstead and the area between Hempstead and US 290. In the new model, the sub-area size, and TC&R values are adjusted to represent only the upstream offsite areas. The offsite upstream of Hempstead was modeled within the Hempstead SWMM model. The downstream outflow hydrograph from the Hempstead model was combined with the hydrograph between Hempstead and US 290, in order to develop the upstream inflow hydrograph in the US 290 model.

The existing TxDOT drainage system draining to Outfall No. 13 consists of one major trunk line that is located in the median separation ditch between the westbound frontage and mainlanes. Westbound mainlane flows are collected in the median ditch into area inlets. Westbound frontage road flows are collected in curb inlets. For the area south of US 290 centerline, the eastbound mainlanes drain to median ditches between the mainlane and frontage and the frontage road drains into curb inlets. Laterals are used to carry the flows from the area inlets to the trunk line. The trunk line varies from 24" to 42" RCP. The drainage system is shown in **Exhibit 5**. This system has no detention pond.

The system conveys the runoff to the existing 8'x12' RCB near baseline station 2616+00 that extends approximately 260' to the north along Fairbanks-North Houston Road to outfall at Cole Creek. A time stage hydrograph developed from the modified FEMA effective models was input into SWMM as the tailwater boundary condition.

4.14.2 Proposed Conditions

The total proposed condition drainage area contributing to this outfall is 24.02 acres. The change in drainage area compared to existing conditions is due to proposed road

grades and location of the proposed storm sewer system. The proposed project increases the impervious cover to 73%

The proposed storm sewer system consists of two trunk line systems extending along the westbound and eastbound frontage roads. West of the outfall, the trunk line varies from 24" to 42" RCP along the westbound frontage and from 24" to 48" RCP along the eastbound frontage. East of the outfall, the trunk line varies from 24" to 36" RCP along the westbound lanes and 24" to 42" RCP along the eastbound lanes. The proposed storm sewer trunk line systems outfall into the existing 8'x12' RCB at Fairbanks-North Houston. The proposed drainage system is shown in **Exhibit 7**. Proposed storm sewer profiles are shown in **Exhibit 8**.

Outfall No. 11 through Outfall No. 16 drain to Cole Creek [E117-00-00], which runs parallel to US 290. Due to lack of available land it was not feasible to mitigate the increase in flows at these outfalls. Therefore, mitigation was placed along Cole Creek [E117-00-00] in order to mitigate the increase in flows from Outfall No. 11 through Outfall No. 16. An overall watershed analysis was conducted on [E117-00-00] and is discussed in detail in Sections 2.5 and 3.5. The mitigation analysis conducted within SWMM for these outfalls show increases in flow; however, any increases to the 100-yr water surface elevations along the storm sewer were mitigated.

For computed flows in existing, proposed w/o mitigation, and proposed w/ mitigation conditions, see summary tables in **Section 3.2**. Impacts in flow are mitigated by the storage volume within the detention pond located along [E117-00-00]. See Section 3.5 for the watershed mitigation analysis results. Impacts in water surface elevation are mitigated by the storage volume with in the storm sewer and above-ground storage on the roadway. The **Hydraulic Results Summary Tables** indicate no impact to the 100-yr water surface elevations along the storm sewer system.

4.15 Outfall No. 14: Outlet Ditch to Cole Creek (Station 2643+00)

The US 290 reach draining to this outfall extends from 500' west of Flintrock Rd. to Guhn Rd. (Sta. 2629+00 to Sta. 2653+00).

4.15.1 Existing Conditions

The total existing condition drainage area contributing to this outfall is 52.70 acres. The impervious cover is 37%.

The existing TxDOT drainage system draining to Outfall No. 14 consists of one major trunk line that is located in the median separation ditch between the westbound frontage and mainlanes. Westbound mainlane flows are collected in the median ditch into area inlets. Westbound frontage road flows are collected in curb inlets. For the area south of US 290 centerline, the eastbound mainlanes drain to median ditches between the mainlane and frontage and the frontage road drains into curb inlets. Laterals are used to carry the flows from the area inlets to the trunk line. The trunk

line varies from 42" to 48" RCP. The drainage system is shown in **Exhibit 5**. This system has no detention pond.

The system conveys the runoff to the existing 78" RCP near baseline station 2643+00 that discharges by Outlet Ditch to Cole Creek. A time stage hydrograph developed from the Revised Existing Watershed models was input into SWMM as the tailwater boundary condition.

4.15.2 Proposed Conditions

The total proposed condition drainage area contributing to this outfall is 53.27 acres. The change in drainage area compared to existing conditions is due to proposed road profiles and location of proposed storm sewer system. The proposed project increases the impervious cover to 45%.

The proposed storm sewer system consists of two trunk line systems extending along the westbound and eastbound frontage roads. West of the outfall, the trunk line varies from 24" RCP to 5'x3' RCB along the westbound frontage and from 24" RCP to 5'x3' RCB along the eastbound frontage. East of the outfall, the trunk line varies from 24" RCP to 4'x3' RCB along the westbound lanes and 4'x3' to 5'x3' RCB along the eastbound lanes. The eastbound lane systems connect to the westbound lanes systems across US 290 via 2-6'x3' RCB. The proposed storm sewer trunk line systems outfall into the proposed 2-6'x3' RCB at the outfall. The proposed drainage system is shown in **Exhibit 7**. Proposed storm sewer profiles are shown in **Exhibit 8**.

Outfall No. 11 through Outfall No. 16 drain to Cole Creek [E117-00-00], which runs parallel to US 290. Due to lack of available land it was not feasible to mitigate the increase in flows at these outfalls. Therefore, mitigation was placed along Cole Creek [E117-00-00] in order to mitigate the increase in flows from Outfall No. 11 through Outfall No. 16. An overall watershed analysis was conducted on [E117-00-00] and is discussed in detail in Sections 2.5 and 3.5. The mitigation analysis conducted within SWMM for these outfalls show increases in flow; however, any increases to the 100-yr water surface elevations along the storm sewer were mitigated.

The design for the storm sewer for this outfall has identified some special considerations. The existing storm sewer flowline at the outfall channel is lower then the channel invert. The existing channel has a drop structure just north of the US 290 ROW, in order to allow the existing storm sewer to outfall at a lower elevation. The proposed storm sewer outfalls below the existing channel flowline; therefore, channel improvements are proposed from the storm sewer outfall to Cole Creek, approximately 360 feet. The proposed channel improvements are trapezoidal in shape with an 8-foot bottom width, 3-to-1 side slopes, a 0.10% flowline slope, and 15-foot maintenance berms. The proposed channel improvements utilize the 60-foot Harris County easement and an additional 15 feet of ROW is required.

For computed flows in existing, proposed w/o mitigation, and proposed w/ mitigation conditions, see summary tables in **Section 3.2**. Impacts in flow are mitigated by the storage volume within the detention pond located along [E117-00-00]. See Section 3.5 for the watershed mitigation analysis results. Impacts in water surface elevation are mitigated by the storage volume with in the storm sewer and above-ground storage on the roadway. The **Hydraulic Results Summary Tables** indicate no impact to the 100-yr water surface elevations along the storm sewer system.

4.16 Outfall No. 15: Outlet Ditch to Cole Creek (Station 2662+50)

The US 290 reach draining to this outfall extends from Guhn Rd. to W. Tidwell Rd. (Sta. 2653+00 to Sta. 2676+00).

4.16.1 Existing Conditions

The total existing condition drainage area contributing to this outfall is 154.09 acres. The impervious cover is 52%.

The existing TxDOT drainage system draining to Outfall No. 15 consists of one major trunk line that is located in the median separation ditch between the westbound frontage and mainlanes. Westbound mainlane flows are collected in the median ditch into area inlets. Westbound frontage road flows are collected in curb inlets. For the area south of US 290 centerline, the eastbound mainlanes drain to median ditches between the mainlane and frontage and the frontage road drains into curb inlets. Laterals are used to carry the flows from the area inlets to the trunk line. The Trunk line varies from 30” to 54” RCP. The existing storm sewer trunk line systems outfall into 2-60” RCP that carry the flow across the westbound frontage road to the outfall channel. A large offsite storm sewer system enters the 2-60” RCP at the outfall via a 48” RCP. The drainage system is shown in **Exhibit 5**. This system has no detention pond.

The system conveys the runoff to the existing 2-60” RCP near baseline station 2662+50 that discharges by Outlet Ditch to Cole Creek. A time stage hydrograph developed from the Revised Existing Watershed models was input into SWMM as the tailwater boundary condition.

4.16.2 Proposed Conditions

The total proposed condition drainage area contributing to this outfall is 158.78 acres. The change in drainage area compared to existing conditions is due to proposed road profiles and location of proposed storm sewer system. The proposed project increases the impervious cover to 54%.

The proposed storm sewer system consists of two trunk line systems extending along the westbound and eastbound frontage roads. West of the outfall, the trunk line varies from 24” to 36” RCP along the westbound frontage and from 24” to 36” RCP along the eastbound frontage. East of the outfall, the trunk line varies from 24” to 48” RCP along the westbound lanes and 24” RCP to 2-8’x5’ RCB along the eastbound lanes.

The eastbound lane systems connect to the westbound lanes systems across US 290 via 2-8'x5' RCB. The proposed drainage system is shown in **Exhibit 7**. Proposed storm sewer profiles are shown in **Exhibit 8**.

Outfall No. 11 through Outfall No. 16 drain to Cole Creek [E117-00-00], which runs parallel to US 290. Due to lack of available land it was not feasible to mitigate the increase in flows at these outfalls. Therefore, mitigation was placed along Cole Creek [E117-00-00] in order to mitigate the increase in flows from Outfall No. 11 through Outfall No. 16. An overall watershed analysis was conducted on [E117-00-00] and is discussed in detail in Sections 2.5 and 3.5. The mitigation analysis conducted within SWMM for these outfalls show increases in flow; however, any increases to the 100-yr water surface elevations along the storm sewer were mitigated.

For computed flows in existing, proposed w/o mitigation, and proposed w/ mitigation conditions, see summary tables in **Section 3.2**. Impacts in flow are mitigated by the storage volume within the detention pond located along [E117-00-00]. See Section 3.5 for the watershed mitigation analysis results. Impacts in water surface elevation are mitigated by the storage volume with in the storm sewer and above-ground storage on the roadway. The **Hydraulic Results Summary Tables** indicate no impact to the 100-yr water surface elevations along the storm sewer system.

4.17 Outfall No. 16: Hollister Dr. System (Station 2689+00)

The US 290 reach draining to this outfall extends from W. Tidwell Rd. to 600' east of Hollister Dr. (Sta. 2676+00 to Sta. 2695+00).

4.17.1 Existing Conditions

The total existing condition drainage area contributing to this outfall is 92.90 acres. The onsite impervious cover is 56%.

The existing TxDOT drainage system draining to Outfall No. 16 consists of one major trunk line that is located in the median separation ditch between the westbound frontage and mainlanes. Westbound mainlane flows are collected in the median ditch into area inlets. Westbound frontage road flows are collected in curb inlets. For the area south of US 290 centerline, the eastbound mainlanes drain to median ditches between the mainlane and frontage and the frontage road drains into curb inlets. Laterals are used to carry the flows from the area inlets to the trunk line. The trunk line varies from 36" to 48" RCP. The existing storm sewer trunk line systems outfall into a 66" RCP at Hollister Drive that carry the flows via storm sewer 1700' north along Hollister to Cole Creek. The drainage system is shown in **Exhibit 5**. This system has no detention pond.

The system conveys the runoff to the existing 78" RCP near baseline station 2689+00 that discharges to the Hollister Dr. System and to Cole Creek, approximately 1700'

north of US 290. A time stage hydrograph developed from the Revised Existing Watershed models was input into SWMM as the tailwater boundary condition.

4.17.2 Proposed Conditions

The total proposed condition drainage area contributing to this outfall is 86.47 acres. The change in drainage area compared to existing conditions is due to proposed road profiles and location of proposed storm sewer system. The proposed project increases the impervious cover to 59%.

The proposed storm sewer system consists of two trunk line systems extending along the westbound and eastbound frontage roads. West of the outfall, the trunk line varies from 24" to 30" RCP along the westbound frontage and from 30" to 48" RCP along the eastbound frontage. East of the outfall, the trunk line varies from 24" to 36" RCP along the westbound lanes and 24" to 36" RCP along the eastbound lanes. The eastbound lane systems connect to the westbound lanes systems across US 290 via 54" RCP, which connects to the existing 66" RCP at Hollister road. The proposed drainage system is shown in **Exhibit 7**. Proposed storm sewer profiles are shown in **Exhibit 8**.

Outfall No. 11 through Outfall No. 16 drain to Cole Creek [E117-00-00], which runs parallel to US 290. Due to lack of available land it was not feasible to mitigate the increase in flows at these outfalls. Therefore, mitigation was placed along Cole Creek [E117-00-00] in order to mitigate the increase in flows from Outfall No. 11 through Outfall No. 16. An overall watershed analysis was conducted on [E117-00-00] and is discussed in detail in Sections 2.5 and 3.5. The mitigation analysis conducted within SWMM for these outfalls show increases in flow; however, any increases to the 100-yr water surface elevations along the storm sewer were mitigated.

For computed flows in existing, proposed w/o mitigation, and proposed w/ mitigation conditions, see summary tables in **Section 3.2**. Impacts in flow are mitigated by the storage volume within the detention Pond located along [E117-00-00]. See Section 3.5 for the watershed mitigation analysis results. Impacts in water surface elevation are mitigated by the storage volume with in the storm sewer and above-ground storage on the roadway. The **Hydraulic Results Summary Tables** indicate no impact to the 100-yr water surface elevations along the storm sewer system.

4.18 Outfall No. 17: Langfield St [to Brickhouse Gully Trib. E115-04-00] (Station 2713+75)

The US 290 reach draining to this outfall extends from 1000' east of Hollister Dr. to Northwest Central Dr. (Sta. 2695+00 to Sta. 2725+00).

4.18.1 Existing Conditions

The total existing condition drainage area contributing to this outfall is 105.12 acres. The impervious cover is 47%.

The offsite areas for this system consist of developments adjacent to US 290 including the COH storm sewer system crossing US 290 through an existing 48" RCP.

This drainage system collects flow from the eastbound frontage road through curb inlets to the trunk line in the eastbound median ranging in size from 24" RCP to 5'x4' RCB. The eastbound frontage and median ditches are connected to the trunk line via lateral leads that vary in size. This system crosses US 290 to serve a significant area to the north of US 290, in addition to the westbound frontage road and mainlanes.

The 48" RCP crossing, which conveys the flow north of US 290, ties into the existing 8'x5' RCB near baseline station 2713+75 that discharges to Langfield St [to Brickhouse Gully Trib. E115-04-00]. The existing outfall location was designed to drain into [E115-04-00] based on proposed channel improvements. The as-built plans indicate that a bubble chamber was designed to allow flow to outfall into the channel until the proposed channel improvements were made. Field reconnaissance and reference to as-built plans indicate that the channel improvements were never made and therefore the flowline of the existing 8'x5' RCB is located well below the existing channel flowline elevation. The existing drainage system is shown in **Exhibit 5**.

The tailwater boundary condition for this outfall is a time-stage hydrograph obtained from the modified FEMA effective HEC-RAS model for [E115-04-00].

4.18.2 Proposed Conditions

The total proposed condition drainage area contributing to this outfall is 101.21 acres. The change in drainage area compared to existing conditions is due to proposed road profiles and location of proposed storm sewer system. The proposed project increases the impervious cover to 52%.

The proposed system will replace the existing system with new inlets and trunklines.

The proposed system collects flow through area inlets and curb inlets. West of the outfall, the trunk consists of a 6'x4'RCB along the westbound frontage lanes, and ranges in size from 48" RCP to a 60" RCP along the eastbound frontage lanes. East of the outfall, the trunk lines vary from a 42" RCP along the westbound frontage lanes to an 8'x5' RCB along the eastbound lanes where the proposed stormsewer connects to the Pinemont system to mitigate the additional flow. The eastbound lane system connects to the westbound lane system across US 290 through an 8'x6' RCB as well as two smaller equalizer pipes (30"RCP and 48" RCP). Both trunk lines are located in the curb line of the westbound and eastbound frontage roads. The existing

8'x5' RCB outfall structure will remain in place. Proposed storm sewer profiles are shown in **Exhibit 8**.

For computed flows in existing, proposed w/o mitigation, and proposed w/ mitigation conditions, see summary tables in **Section 3.2**. Impacts are mitigated by the storage volume within Pond 4A and Pond 4D at Outfall 18, storm sewer and above-ground storage on the roadway. The **Hydraulic Results Summary Tables** indicate no impact to the 100-yr water surface elevations along the storm sewer system.

4.19 Outfall No. 18: Pinemont Dr. System (Station 2737+50)

The US 290 reach draining to this outfall extends from Northwest Central Dr. to 800' east of Pinemont Dr. (Sta. 2725+00 to Sta. 2745+00).

4.19.1 Existing Conditions

The total existing condition drainage area contributing to this outfall is 73.10 acres. The impervious cover is 41%. This system mainly drains the intersection of US 290 and Pinemont Dr. and a significant offsite area to the north of US 290.

The offsite areas for this system consist of developments adjacent to US 290 including the COH stormsewer system along Burr Oak Drive crossing US 290 through an existing 48"-54" RCP.

This drainage system collects flow from the intersection through curb inlets which have laterals. The storm drains cross US 290 from north to south at three locations through a 24", 48" and 54" RCP. They ultimately tie into the existing 7'x5' RCB on the south side of US 290 along Pinemont Drive.

The system conveys the runoff to the existing 7'x5' RCB near baseline station 2737+50 that discharges to Pinemont Dr. System . This system outfalls to Brickhouse Gully Tributary [E115-04-00] approximately 1100' south of US 290.

The existing outfall location was designed to drain into [E115-04-00] based on proposed channel improvements. The as-built plans indicate that a bubble chamber was designed to allow flow to outfall into the channel until the proposed channel improvements were made. Field reconnaissance and reference to as-built plans indicate that the channel improvements were never made and therefore the flowline of the existing 7'x5' RCB is located well below the existing channel flowline elevation. The existing drainage system is shown in **Exhibit 5**.

The tailwater boundary condition for this outfall is a time-stage hydrograph obtained from the FEMA effective HEC-RAS model for [E115-04-00].

4.19.2 Proposed Conditions

The total proposed condition drainage area contributing to this outfall is 84.22 acres. The change in drainage area compared to existing conditions is due to proposed road

profiles and location of proposed storm sewer system. The proposed project increases the impervious cover to 51%.

The proposed system will replace a portion of the existing system with new inlets and trunk lines. This is a complex system with multiple connections between the varying segments of the system.

The proposed system collects flow through area inlets and curb inlets. West of the intersection, the trunk lines vary from 48" to 54" RCP along the westbound frontage lanes, and an 8'x5' RCB along the eastbound frontage lanes. East of the intersection, the trunk lines vary from 24" to 4'x3' RCB. The trunk lines are in the curb line of the westbound and eastbound frontage roads. These trunk lines discharge to the existing 7'x5'RCB along Pinemont Dr. Proposed storm sewer profiles are shown in **Exhibit 8**.

The system is connected to two mitigation sites, Pond 4A and Pond 4D. The mitigation storage volume for Outfall 17 and Outfall 18 is located in these two ponds. Pond 4A is approximately a 6.2 acre site at Pinemont along the southeast ROW and Pond 4D is approximately a 2.41 acre site located beneath the Pinemont Dr. bridge. These ponds are designed to mitigate a reach from just east of Hollister to East of the Pinemont Dr. System. The proposed basin locations and configuration are shown in **Exhibit 9**.

For computed flows in existing, proposed w/o mitigation, and proposed w/ mitigation conditions, see summary tables in **Section 3.2**. Impacts are mitigated by the storage volume within the detention ponds, storm sewer and above-ground storage on the roadway. The **Hydraulic Results Summary Tables** indicate no impact to the 100-yr water surface elevations along the storm sewer system.

4.20 Outfall No. 19: Bingle Rd. System. (Station 2756+25)

The US 290 reach draining to this outfall extends from 800' east of Pinemont Dr. to 500' east of Bingle Rd. (Sta. 2746+00 to Sta. 2760+00).

4.20.1 Existing Conditions

The total existing condition drainage area contributing to this outfall is 63.70 acres. The impervious cover is 46%.

The offsite areas for this system consist of developments adjacent to US 290 including the COH stormsewer system along Bingle Road which enters the US 290 system through an existing 48" RCP and crosses US 290 through a 54" RCP.

Flow in the system is collected in area and curb inlets. The flows from these inlets discharge through laterals varying in size. The system conveys the runoff to the existing 66" & 36" RCP near baseline station 2756+25 that is part of the Bingle Rd.

System. that discharges to [E115-04-00], approximately 1400' south of US 290. The existing drainage system is shown in **Exhibit 5**.

The tailwater boundary condition for this outfall is a time-stage hydrograph obtained from the modified FEMA effective HEC-RAS model for [E115-04-00].

4.20.2 Proposed Conditions

The total proposed condition drainage area contributing to this outfall is 68.15 acres. The proposed project increases the impervious cover to 51%.

The proposed system will replace the existing system with new inlets and trunk lines in the eastbound and westbound frontage roads.

The proposed system collects flow through area inlets and curb inlets. West of the intersection, the trunk line varies from 36" RCP to a 4'x4' RCB. East of the intersection, the trunk line is a 36" RCP along the westbound lanes and ranges from 36" to 42" RCP along the eastbound lanes. Trunk lines are located in the curb line of the frontage roads. The westbound lane systems connect to the eastbound lanes systems across US 290 via a 6'x5' RCB. Proposed storm sewer profiles are shown in **Exhibit 8**.

The mitigation storage volume for Outfall 19 is located in Pond 4B. The proposed detention pond is located west of Bingle Road and includes a 1.14 acre site. The proposed basin location and configuration is shown in **Exhibit 9**.

For computed flows in existing, proposed w/o mitigation, and proposed w/ mitigation conditions, see summary tables in **Section 3.2**. Impacts are mitigated by the storage volume within detention Pond 4B, storm sewer and above-ground storage on the roadway. The **Hydraulic Results Summary Tables** indicate no impact to the 100-yr water surface elevations along the storm sewer system.

4.21 Outfall No. 20: W. 43rd St. System [to Brickhouse Gully Trib.] (Station 2789+00)

The US 290 reach draining to this outfall extends from 500' east of Bingle Rd. to 1000' east of W. 43rd St. (Sta. 2760+00 to Sta. 2790+00).

4.21.1 Existing Conditions

The total existing condition drainage area contributing to this outfall is 99.13 acres. The onsite impervious cover is 43%. This system drains the intersection of US 290 and W. 43rd St, and an offsite area north of US 290.

The eastbound frontage road is drained through curb inlets and into laterals. These laterals drain to the trunk line in the eastbound median ditch which ranges in size from 24" to 78" RCP. The westbound frontage and median ditches are connected to

the main trunk line through laterals as well. This system crosses US 290 through several crossings ranging in size from 30" to 66" RCP. The 66" RCP drains a sizable area to the north of US 290, in addition to the westbound frontage road and mainlanes. This system has no detention pond.

The system conveys the runoff to the existing 78" RCP near baseline station 2789+00 that discharges to the W. 43rd St. System [to Brickhouse Gully Trib.]. This outfall channel is modeled to the confluence with Brickhouse Gully. The existing drainage system is shown in **Exhibit 5**.

A boundary condition is established using a time-stage hydrograph obtained for the modified FEMA effective HEC-RAS model for [E115-00-00].

4.21.2 Proposed Conditions

The total proposed condition drainage area contributing to this outfall is 29.02 acres. The change in drainage area compared to existing conditions is due to proposed road profiles and location of proposed storm sewer system. The large offsite area that drains into the US 290 System from the W. 43rd St System is draining to Outfall 22 in the proposed conditions. This results in a large difference in drainage area when comparing existing to proposed. The proposed project increases the impervious cover to 55%.

The proposed system will replace the existing system with new inlets and trunk lines in the eastbound and westbound frontage roads.

The proposed system collects flow through area inlets and curb inlets. The trunk line along the westbound frontage road west of the outfall varies in size from 36" RCP to 7'x5' RCB. This system is interconnected to the adjacent Outfall No. 22 (See **Section 4.22**). The trunk line along the eastbound frontage drains directly into Outfall 20 and ranges in size from 36" RCP to a 6'x4' RCB. A 5'x4' RCB cross-drainage structure was added to equalize the hydraulic gradeline and to utilize some of the available capacity in E115-04-00. Proposed storm sewer profiles are shown in **Exhibit 8**.

Mitigation for this outfall is combined with that required for Outfall No. 22. The proposed basin location and configuration at Pond 4C is shown in **Exhibit 9**.

For computed flows in existing, proposed w/o mitigation, and proposed w/ mitigation conditions, see summary tables in **Section 3.2**. Impacts are mitigated by the storage volume within the detention pond, storm sewer and above-ground storage on the roadway. The **Hydraulic Results Summary Tables** indicate no impact to the 100-yr water surface elevations along the storm sewer system.

4.22 Outfall No. 21: Hewitt Dr. Outfall [to E515-01-00] (Station 2799+50)

The US 290 reach draining to this outfall extends from 1000' east of W. 43rd St. to 800' west of Brickhouse Gully (Sta. 2790+00 to Sta. 2804+00).

4.22.1 Existing Conditions

The total existing condition drainage area contributing to this outfall is 68.05 acres. The impervious cover is 56%. This system drains a small reach of US 290 and mainly serves to drain the offsite area to the north of US 290 along Hewitt Dr. through an existing 48" RCP.

Flow in this small area is collected in area and curb inlets, and conveyed to the trunk line. The trunk line is a 48" RCP crossing US 290 from north to south, and part of the City of Houston storm sewer system.

The system conveys the runoff to the existing 54" RCP near baseline station 2799+50 that discharges to the HCFCD [E515-01-00] detention pond via a 54" RCP approximately 250' south of US 290. The existing drainage system is shown in **Exhibit 5**.

A boundary condition is established using a time-stage hydrograph for the pond.

4.22.2 Proposed Conditions

The total proposed condition drainage area contributing to this outfall is 7.17 acres. The change in drainage area compared to existing conditions is due to proposed road profiles and location of proposed storm sewer system. The proposed project increases the impervious cover to 78%.

The proposed storm sewer system consists of new storm sewer in the westbound and eastbound frontage roads.

The proposed system collects flow through area inlets and curb inlets. The system along the westbound frontage road is interconnected to the adjacent Outfall No. 22 (See **Section 4.22**). The storm drainage along the westbound lanes is partially diverted, in addition to those from Outfall No. 20 to outfall directly to Brickhouse Gully [E115-00-00]. The trunk line west of the outfall along the eastbound frontage road varies in size from 36" to 48" RCP. The trunkline along the eastbound frontage road east of the outfall is a 42" RCP. This system discharges to [E515-01-00] through a 54" RCP with a 30" RCP restrictor. Proposed storm sewer profiles are shown in **Exhibit 8**.

Mitigation for this outfall is combined with that required for outfall No. 20 and 22 (Brickhouse Gully). The proposed basin location and configuration for Pond 4C is shown in **Exhibit 9**.

For computed flows in existing, proposed w/o mitigation, and proposed w/ mitigation conditions, see summary tables in **Section 3.2**. Impacts are mitigated by the storage volume within detention Pond 4C, storm sewer and above-ground storage on the roadway. The **Hydraulic Results Summary Tables** indicate no impact to the 100-yr water surface elevations along the storm sewer system.

4.23 Outfall No. 22: Brickhouse Gully [E115-00-00] (Station 2810+00)

The US 290 reach draining to this outfall extends from 800' west of Brickhouse Gully to 800' east of W. 34th St. (Sta. 2804+00 to Sta. 2855+00).

4.23.1 Existing Conditions

The total existing condition drainage area contributing to this outfall is 116.27 acres. The impervious cover is 61%. This system drains two major intersections of US 290 at Antoine Dr. and W. 34th St., as well as their respective COH storm sewer systems.

The large offsite flows for this system are obtained from modified FEMA effective models (HEC-HMS) for [E115-00-00], [E115-04-00], and the Antoine storm sewer system. In those models, the sub-area size and TC&R values are adjusted to represent only the areas of interest.

The trunk line is in the westbound median ditch. The westbound storm sewer line drains the W. 34th intersection, Antoine intersection, frontage roads and mainlanes through the 108" RCP to Brickhouse Gully on the east side of the channel. The eastbound frontage and mainlanes collect the flows through curb and ditch grate inlets and convey the flow to the main trunk line through lateral lines. This system also drains a major offsite area served by an 84" RCP that connects to the US 290 system at Antoine Dr.

The system conveys the runoff to Brickhouse Gully [E115-00-00] near baseline station 2810+00. The existing drainage system is shown in **Exhibit 5**.

The tailwater boundary condition for this outfall is a time-stage hydrograph obtained from the modified FEMA effective HEC-RAS model for [E115-00-00].

4.23.2 Proposed Conditions

The total proposed condition drainage area contributing to this outfall is 243.58 acres. The change in drainage area compared to existing conditions is due to proposed road profiles and location of proposed storm sewer system. The proposed project decreases the impervious cover to 57%.

The proposed system will replace the existing system with new inlets and trunk lines in the eastbound and westbound frontage roads.

East of the outfall, the westbound frontage road trunk line varies from 42" RCP to 10'x10' RCB. A proposed 8'x5' RCB connects the westbound storm sewer to the eastbound storm sewer in order to utilize the storage in Pond 4C. The trunk line in the eastbound line varies from 42" RCP to 9'x8' RCB and connects to the detention pond through an 8'x5' RCB.

West of the outfall, the westbound frontage road trunk line varies from 36" RCP to 9'x5' RCB. The trunk line is located in the curb line of the westbound and eastbound frontage roads. Proposed storm sewer profiles are shown in **Exhibit 8**.

The mitigation storage volume for Outfall 20, Outfall 21 and Outfall 22 is located in Pond 4C. The detention pond is east of the intersection of US 290 and Antoine Dr. The proposed basin location and configuration for Pond 4C is shown in **Exhibit 9**.

For computed flows in existing, proposed w/o mitigation, and proposed w/ mitigation conditions, see summary tables in **Section 3.2**. Impacts are mitigated by the storage volume within the detention pond, storm sewer and above-ground storage on the roadway. The **Hydraulic Results Summary Tables** indicate no impact to the 100-yr water surface elevations along the storm sewer system.

5. CONCLUSIONS

The recommendations contained in this study are intended to provide the Texas Department of Transportation (TxDOT) with a preliminary drainage mitigation plan for the drainage systems related to Phase II of the US 290/Hempstead Program.

Based on the drainage analysis described in this study and in referenced tables and appendices, this study concludes that Phase II of the proposed US 290 Program will require construction of nineteen (19) detention ponds (drainage mitigation facilities) to offset potential impacts to receiving streams and abutting properties. Recommended detention mitigation pond locations and characteristics are shown in **Exhibit 9**. The exhibits include layouts of recommended storm drain system sizes and connectivity to proposed ponds.

The storm drain system trunk lines along the length of the study area and proposed cross drainage structures have been sized and designed to operate in conjunction with the detention ponds to mitigate potential impacts to the 100-yr flood flows and elevations. Recommended storm drain trunk line sizes, general locations, and preliminary storm drain and frontage road profiles are included in **Exhibit 7 and Exhibit 8**.

The proposed drainage system and mitigation facilities for the study area will result in no adverse flooding impacts to adjacent waterways or properties for the 10-year and 100-yr storm events within the study limits.

Table 1.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 1-4

Model: 100YR_SegE_Existing.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span check(ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 1-4																
A10-to-A12	Rectangular	A10	A12	133.40	133.25	1.00	5.00	2.00	300.00	0.05	30	15.96	2.99	136.58	136.18	136.67
A11-AM35	Circular	A11	A-M35	125.83	125.78	1.00	0.00	1.50	15.00	0.33	-10	16.23	2.22	130.00	130.11	131.00
OF A11	Trapezoidal	A11	B-F23	129.50	128.30	1.00	32.00	0.50	343.00	0.35	20	16.17	2.26	130.00	129.95	131.00
A12-to-A14	Rectangular	A12	A14	133.25	133.08	1.00	5.00	2.00	350.00	0.05	34	15.96	3.39	136.18	135.58	136.67
A14-to-A16	Rectangular	A14	A16	133.08	133.00	1.00	5.00	2.00	150.00	0.05	37	15.96	3.73	135.58	135.38	136.29
A16-AF4	Natural	A16	A-F4	133.00	131.41	1.00	10.00	3.50	612.00	0.26	35	16.10	1.78	135.38	134.98	137.00
A2-to-A4	Rectangular	A2	A4	133.84	133.77	1.00	4.00	2.00	150.00	0.05	6	15.96	0.78	137.09	137.14	137.59
A4-to-A6	Rectangular	A4	A6	133.77	133.62	1.00	4.00	2.00	300.00	0.05	15	15.96	1.89	137.14	136.82	137.14
A6-to-A8	Rectangular	A6	A8	133.62	133.48	1.00	5.00	2.00	275.00	0.05	25	15.96	2.52	136.82	136.72	136.97
A8-to-A10	Rectangular	A8	A10	133.48	133.40	1.00	5.00	2.00	125.00	0.06	28	15.96	2.77	136.72	136.58	137.05
AF10-AF12	Natural	A-F10	A-F12	130.80	130.40	1.00	10.00	3.50	220.00	0.18	41	16.41	1.53	133.94	133.89	134.30
AF12-AF14	Circular	A-F12	A-F14	130.40	130.38	2.00	0.00	2.50	52.00	0.04	43	16.40	4.32	133.89	133.83	134.20
AF14-AF16	Natural	A-F14	A-F16	130.38	130.48	1.00	0.00	3.00	348.00	-0.03	41	16.48	0.94	133.83	133.76	134.00
AF16-AF18	Circular	A-F16	A-F18	130.48	130.74	2.00	0.00	2.50	68.00	-0.38	41	16.46	4.02	133.76	133.67	134.40
AF18-AF20	Natural	A-F18	A-F20	130.74	130.67	1.00	10.00	2.75	216.00	0.03	40	16.47	1.88	133.67	133.58	134.00
AF20-AF22	Circular	A-F20	A-F22	130.67	129.64	2.00	0.00	2.50	64.00	1.61	41	16.45	5.36	133.58	133.47	133.50
AF22-AF24	Natural	A-F22	A-F24	129.64	129.26	1.00	10.00	3.00	597.00	0.06	40	17.51	0.83	133.47	133.37	134.00
AF24-AF26	Circular	A-F24	A-F26	129.26	129.87	2.00	0.00	2.50	41.00	-1.49	46	17.46	4.70	133.37	133.31	133.30
AF26-AF28	Natural	A-F26	A-F28	129.87	129.18	1.00	10.00	3.80	736.00	0.09	69	16.90	1.89	133.31	132.68	134.50
AF28-AF30	Circular	A-F28	A-F30	129.18	129.05	2.00	0.00	2.50	68.00	0.19	69	16.96	6.99	132.68	132.21	133.00
AF30-AF32	Natural	A-F30	A-F32	129.05	128.00	1.00	10.00	3.00	525.00	0.20	68	17.07	2.16	132.21	131.35	132.50
AF32-AF34	Circular	A-F32	A-F34	128.00	127.75	2.00	0.00	2.50	71.00	0.35	70	17.13	7.13	131.35	130.84	132.10
AF34-AOUT	Natural	A-F34	A-OUT	127.75	126.90	1.00	10.00	4.00	520.00	0.16	70	17.15	2.38	130.84	129.88	132.00
AF35-AM31	Circular	A-F35	A-M31	125.60	125.35	1.00	0.00	1.50	83.00	0.30	5	16.70	3.08	131.15	131.07	131.00
AF36-AOUT	Natural	A-F36	A-OUT	127.52	127.40	1.00	10.00	2.50	585.00	0.02	18	17.66	1.18	129.93	129.88	130.02
AF38-AF36	Natural	A-F38	A-F36	127.84	127.52	1.00	10.00	2.50	774.00	0.04	11	17.87	0.60	129.94	129.93	130.34
AF4-AF6	Circular	A-F4	A-F6	131.41	131.78	2.00	0.00	2.50	55.00	-0.67	40	16.34	4.10	134.98	134.87	135.41
AF4-AF6	Natural	A-F4	A-F6	134.91	134.75	1.00	0.00	0.50	33.00	0.48	3	16.46	0.81	134.98	134.87	135.41
AF40-AF38	Natural	A-F40	A-F38	128.33	127.84	1.00	10.00	1.50	484.00	0.10	5	16.04	0.64	129.99	129.94	130.00
AF6-AF8	Natural	A-F6	A-F8	131.78	131.00	1.00	10.00	2.20	362.00	0.22	39	16.40	2.17	134.87	134.00	135.25
AF8-AF10	Circular	A-F8	A-F10	131.00	130.80	2.00	0.00	2.50	40.00	0.50	42	16.40	4.06	134.00	133.94	134.30
AM11-AM13	Natural	A-M11	A-M13	135.50	134.67	1.00	10.00	0.50	275.00	0.30	0	16.03	0.11	135.66	135.65	136.00
AM12-AM14	Natural	A-M12	A-M14	131.58	131.50	1.00	10.00	3.40	658.00	0.01	79	16.29	1.37	134.57	134.47	135.05
AM13-AM15	Natural	A-M13	A-M15	134.67	133.72	1.00	10.00	1.50	478.00	0.20	12	16.44	1.04	135.65	135.11	136.17
AM14-AM16	Natural	A-M14	A-M16	131.50	128.53	1.00	10.00	3.00	747.00	0.40	84	16.71	1.96	134.47	134.28	134.90
AM15-AM17	Natural	A-M15	A-M17	133.72	133.06	1.00	10.00	1.50	507.00	0.13	20	16.38	0.99	135.11	134.97	135.42
OF A-M16	Trapezoidal	A-M16	A-F26	134.00	134.00	1.00	100.00	0.50	36.00	0.00	45	16.76	1.67	134.28	134.19	134.50
AM16-AM18	Rectangular	A-M16	A-M18	128.51	127.94	1.00	6.00	3.00	598.00	0.10	93	17.79	5.16	134.28	133.71	134.50
AM16-AM18	Natural	A-M16	A-M18	133.00	132.65	1.00	0.00	1.00	598.00	0.06	26	17.00	0.80	134.28	133.71	134.50
AM17-AM19	Natural	A-M17	A-M19	133.06	131.84	1.00	10.00	1.50	619.00	0.20	23	16.20	1.32	134.97	134.71	134.97
AM18-AM20	Rectangular	A-M18	A-M20	127.94	127.33	1.00	6.00	3.00	626.00	0.10	105	17.75	5.80	133.71	132.55	134.00
AM19-AM16	Circular	A-M19	A-M16	128.84	128.51	1.00	0.00	3.00	165.00	0.20	35	16.03	4.87	134.71	134.28	135.00
AM2-AM4	Trapezoidal	A-M2	A-M4	136.35	135.76	1.00	0.00	1.00	352.00	0.17	6	16.02	1.87	137.39	137.06	137.50
AM20-AM24	Rectangular	A-M20	A-M24	127.33	127.06	1.00	6.00	3.00	300.00	0.09	110	17.75	6.10	132.55	131.87	132.65
AM21-AM19	Natural	A-M21	A-M19	134.00	131.84	1.00	10.00	1.50	446.00	0.48	-4	16.37	0.42	134.71	134.71	135.50
AM23-AM25	Natural	A-M23	A-M25	134.15	133.02	1.00	10.00	1.00	525.00	0.22	0	0.00	0.00	134.15	133.91	135.15
AM24-AM36	Rectangular	A-M24	A-M36	127.06	123.00	1.00	6.00	3.00	365.00	1.11	109	17.04	6.59	131.87	130.53	133.25
AM25-AM27	Natural	A-M25	A-M27	133.02	130.20	1.00	10.00	2.00	645.00	0.44	15	16.36	1.47	133.91	130.80	135.02
AM26-AM38	Rectangular	A-M26	A-M38	122.70	122.67	1.00	5.00	5.00	24.00	0.13	100	16.22	3.98	130.46	130.44	132.10
AM27-AM37	Circular	A-M27	A-M37	124.30	124.15	1.00	0.00	3.00	79.00	0.19	31	16.26	4.40	130.80	130.78	133.73
AM28-AM26	Circular	A-M28	A-M26	123.85	123.15	1.00	0.00	4.00	477.00	0.15	45	16.00	3.55	130.74	130.46	131.90
AM3-AM5	Natural	A-M3	A-M5	138.35	134.75	1.00	10.00	3.50	503.00	0.72	19	16.10	2.16	139.43	136.38	141.85
AM30-AM28	Circular	A-M30	A-M28	124.55	123.85	1.00	0.00	3.50	483.00	0.14	30	15.88	3.15	131.03	130.74	131.78
AM31-AM41	Circular	A-M31	A-M41	124.85	124.69	1.00	0.00	3.00	96.00	0.17	13	15.87	2.75	131.07	131.07	131.00
AM32-AM30	Circular	A-M32	A-M30	125.40	124.55	1.00	0.00	2.00	564.00	0.15	10	15.75	3.20	131.01	131.03	131.50

Table 1.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 1-4

Model: 100YR_SegE_Existing.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span check(ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
AM33-AM31	Circular	A-M33	A-M31	125.60	125.35	1.00	0.00	1.50	220.00	0.11	6	18.20	3.36	130.45	131.07	131.00
OF AM33	Trapezoidal	A-M33	A11	130.00	129.60	1.00	12.00	0.50	366.00	0.11	9	16.28	1.79	130.45	130.00	131.00
AM35-AM32	Circular	A-M35	A-M32	125.78	125.40	1.00	0.00	1.50	187.00	0.20	-8	16.23	2.44	130.11	131.01	138.03
AM36-AM38	Rectangular	A-M36	A-M38	123.00	122.67	1.00	6.00	3.00	30.00	1.10	109	16.98	6.03	130.54	130.44	132.15
AM37-AM26	Circular	A-M37	A-M26	124.15	124.01	1.00	0.00	3.00	80.00	0.18	40	16.25	5.61	130.78	130.46	134.40
AM38-AOUT	Rectangular	A-M38	A-OUT	122.67	122.62	1.00	5.00	5.00	47.00	0.11	198	16.27	7.90	130.44	129.88	132.10
AM39-AM28	Circular	A-M39	A-M28	126.15	125.85	1.00	0.00	2.00	86.00	0.35	7	16.04	3.55	130.81	130.74	135.45
AM4-AM6	Natural	A-M4	A-M6	135.76	133.35	1.00	10.00	3.40	997.00	0.24	19	16.17	1.30	137.06	135.87	139.16
AM41-AM30	Circular	A-M41	A-M30	124.69	124.55	1.00	0.00	3.00	88.00	0.16	18	15.88	2.56	131.07	131.03	137.31
AM5-AM7	Natural	A-M5	A-M7	134.75	133.45	1.00	10.00	3.50	306.00	0.42	20	16.16	1.61	136.38	136.10	138.30
AM5-AM5B	Circular	A-M5	A-M5B	134.60	134.60	2.00	0.00	2.50	62.00	0.00	7	16.33	0.93	136.38	136.38	138.30
AM6-AM8	Natural	A-M6	A-M8	133.35	132.55	1.00	10.00	4.00	221.00	0.36	67	16.33	2.35	135.87	135.61	137.35
AM7-AM6	Circular	A-M7	A-M6	133.45	133.35	2.00	0.00	2.50	172.00	0.06	35	16.33	3.46	136.10	135.87	137.30
AM8-AM12	Rectangular	A-M8	A-M12	132.55	131.58	1.00	6.00	3.00	1065.00	0.09	74	16.29	4.58	135.61	134.57	136.57
AM9-AM7	Natural	A-M9	A-M7	137.00	133.45	1.00	10.00	3.50	500.00	0.71	0	0.00	0.00	136.00	136.10	140.50
E100	**Natural**	**A-OUT**	**E100-OUT**	**122.62**	**122.07**	**1.00**	**0.00**	**0.00**	**1206.00**	**0.05**	**252**	**16.91**	**2.36**	**129.88**	**128.60**	**146.49**
B10-to-B12	Circular	B10	B12	121.71	120.94	1.00	0.00	2.50	135.00	0.57	8	17.79	3.27	125.86	125.80	126.94
B10-to-B12	Trapezoidal	B10	B12	126.44	125.94	1.00	36.00	0.25	135.00	0.37	0	0.00	0.00	125.80	125.80	126.94
B12-to-B14	Circular	B12	B14	120.44	120.32	1.00	0.00	3.00	80.00	0.15	11	17.79	1.61	125.80	125.80	126.44
B12-to-B14	Trapezoidal	B12	B14	125.94	126.25	1.00	36.00	0.50	80.00	-0.39	0	0.00	0.00	125.80	125.80	126.44
B14-to-B16	Circular	B14	B16	120.32	120.11	1.00	0.00	3.00	140.00	0.15	11	17.79	1.44	125.80	125.72	126.75
B16-to-B18	Circular	B16	B18	120.11	119.94	1.00	0.00	3.00	110.00	0.15	11	16.02	1.56	125.72	125.65	126.78
B16-to-B18	Trapezoidal	B16	B18	126.28	125.90	1.00	36.00	0.25	110.00	0.35	0	0.00	0.00	125.65	125.65	126.78
B18-to-B20	Circular	B18	B20	119.94	119.56	1.00	0.00	3.00	255.00	0.15	14	16.02	2.01	125.65	125.64	126.40
B2-BM6	Circular	B2	B-M6	123.10	122.69	1.00	0.00	2.00	60.00	0.68	6	16.00	4.67	128.84	128.85	128.10
B20-to-B22	Circular	B20	B22	119.06	118.86	1.00	0.00	3.50	135.00	0.15	18	16.02	1.83	125.64	125.63	126.28
B20-to-B22	Trapezoidal	B20	B22	125.78	125.24	1.00	36.00	0.25	135.00	0.40	0	0.00	0.00	125.64	125.63	126.28
B22-to-B24	Circular	B22	B24	118.86	118.66	1.00	0.00	3.50	130.00	0.15	21	17.73	2.13	125.63	125.63	126.00
B22-to-B24	Trapezoidal	B22	B24	125.24	124.72	1.00	36.00	0.25	130.00	0.40	3	16.58	0.49	125.63	125.63	126.00
B24-to-B26	Circular	B24	B26	118.16	118.06	1.00	0.00	4.00	95.00	0.11	33	17.74	2.61	125.63	125.63	125.70
B24-to-B26	Trapezoidal	B24	B26	124.72	125.10	1.00	36.00	0.25	95.00	-0.40	-5	17.75	0.57	125.63	125.63	125.70
B26-to-B28	Circular	B26	B28	118.06	117.83	1.00	0.00	4.00	230.00	0.10	34	17.77	2.67	125.63	125.63	125.60
B28-to-B30	Circular	B28	B30	117.83	117.76	1.00	0.00	4.00	75.00	0.09	34	17.77	2.73	125.63	125.62	125.77
B28-to-B30	Trapezoidal	B28	B30	125.27	125.00	1.00	36.00	0.25	75.00	0.36	3	16.57	0.35	125.63	125.62	125.77
B30-to-B32	Circular	B30	B32	117.76	117.62	1.00	0.00	4.00	135.00	0.10	42	17.76	3.32	125.62	125.69	125.50
B30-to-B32	Trapezoidal	B30	B32	125.00	125.58	1.00	36.00	0.25	135.00	-0.43	-1	16.80	0.00	125.62	125.69	125.50
B32-to-B34	Circular	B32	B34	117.62	117.40	1.00	0.00	4.00	75.00	0.29	42	17.76	3.36	125.69	125.75	126.50
B34-BM42	Circular	B34	B-M42	117.40	117.27	1.00	0.00	4.00	75.00	0.17	45	17.76	3.55	125.75	125.81	127.00
OF B34	Trapezoidal	B34	B-OUT	126.40	125.00	1.00	30.00	0.50	100.00	1.40	0	0.00	0.00	125.60	125.29	127.00
B36-BM42	Circular	B36	B-M42	118.53	118.34	1.00	0.00	2.50	46.00	0.41	18	15.91	4.31	125.60	125.81	127.50
OF B36	Trapezoidal	B36	B-OUT	127.00	125.00	1.00	70.00	0.50	50.00	4.00	0	0.00	0.00	125.60	125.29	127.50
B38-to-B36	Circular	B38	B36	118.61	118.53	1.00	0.00	2.50	75.00	0.11	19	15.91	3.79	125.68	125.60	127.50
B4-to-B6	Circular	B4	B6	123.21	122.27	1.00	0.00	1.50	135.00	0.70	-4	17.82	3.05	126.60	126.34	128.52
B4-to-B6	Trapezoidal	B4	B6	128.02	127.49	1.00	36.00	0.50	135.00	0.39	0	0.00	0.00	126.34	126.34	128.52
B40-to-B38	Circular	B40	B38	121.03	120.74	1.00	0.00	1.50	144.00	0.20	2	15.91	1.29	125.68	125.68	128.00
B42-BM16	Circular	B42	B-M16	122.14	121.96	1.00	0.00	1.50	59.00	0.31	8	16.00	4.30	126.77	126.68	127.00
B44-BM54	Circular	B44	B-M54	121.96	121.92	1.00	0.00	1.50	14.00	0.29	6	15.97	3.14	126.98	126.95	125.84
B6-to-B8	Circular	B6	B8	122.27	121.98	1.00	0.00	2.00	135.00	0.21	-6	17.82	2.18	126.34	126.08	127.99
B6-to-B8	Trapezoidal	B6	B8	127.49	126.97	1.00	36.00	0.25	135.00	0.39	0	0.00	0.00	126.08	126.08	127.99
B8-to-B10	Circular	B8	B10	121.98	121.71	1.00	0.00	2.00	135.00	0.20	6	17.80	2.57	126.08	125.86	127.47
B8-to-B10	Trapezoidal	B8	B10	126.97	126.44	1.00	36.00	0.25	135.00	0.39	0	0.00	0.00	125.86	125.86	127.47
BF1-BF27	Circular	B-F1	B-F27	122.84	122.64	1.00	0.00	2.50	66.00	0.30	14	16.02	4.92	129.51	129.49	129.50
BF11-BM38	Rectangular	B-F11	B-M38	117.29	117.05	2.00	7.00	5.00	120.00	0.20	208	17.17	2.96	125.70	125.76	126.00
BF13-BF71	Rectangular	B-F13	B-F71	118.53	118.38	1.00	4.00	4.00	171.00	0.09	96	18.13	5.98	126.24	125.86	126.00
BF15-BF13	Rectangular	B-F15	B-F13	118.68	118.53	1.00	4.00	4.00	300.00	0.05	79	18.46	4.92	126.56	126.24	126.90
BF17-BF15	Rectangular	B-F17	B-F15	118.83	118.68	1.00	4.00	4.00	300.00	0.05	80	15.64	5.04	126.87	126.56	126.50
BF19-BF73	Rectangular	B-F19	B-F73	119.06	118.98	1.00	4.00	4.00	150.00	0.05	69	18.43	4.32	126.95	126.93	126.50
BF2-B38	Circular	B-F2	B38	118.66	118.61	1.00	0.00	2.50	10.00	0.50	17	15.91	3.40	125.71	125.68	126.00
BF20-BF22	Circular	B-F20	B-F22	124.72	124.58	1.00	0.00	1.50	66.00	0.21	9	17.69	4.96	129.92	129.85	130.50
OF BF20	Trapezoidal	B-F20	A-F38	129.50	129.00	1.00	24.00	0.50	560.00	0.09	-9	16.67	0.00	129.92	129.94	130.50

Table 1.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 1-4

Model: 100YR_SegE_Existing.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span check(ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
BF21-BF25	Circular	B-F21	B-F25	123.00	122.88	1.00	0.00	2.50	80.00	0.15	40	17.97	8.16	129.95	129.75	130.00
BF22-BF25	Circular	B-F22	B-F25	124.58	124.38	1.00	0.00	1.50	96.00	0.21	9	17.68	4.98	129.85	129.75	130.00
BF23-BF25	Circular	B-F23	B-F25	124.65	124.38	1.00	0.00	1.50	86.00	0.31	18	16.03	9.80	129.95	129.75	130.00
OF BF23	Circular	B-F23	B-F21	0.05	0.00	1.00	0.00	0.05	10.00	0.50	15	16.63	0.00	##########	##########	130.00
OF BF23	Circular	B-F23	B-F21	0.05	0.00	1.00	0.00	0.05	10.00	0.50	15	16.63	0.00	##########	##########	130.00
BF25-BF27	Circular	B-F25	B-F27	122.88	122.64	1.00	0.00	3.00	152.00	0.16	45	17.98	6.28	129.75	129.49	130.50
BF27-BF29	Circular	B-F27	B-F29	121.64	121.46	1.00	0.00	4.00	101.00	0.18	48	17.66	4.09	129.49	129.44	130.29
BF29-BF31	Circular	B-F29	B-F31	121.46	121.25	1.00	0.00	4.00	146.00	0.14	48	17.70	3.89	129.44	129.36	145.50
BF3-BF5	Natural	B-F3	B-F5	127.88	126.60	1.00	10.00	1.00	655.00	0.20	18	17.10	0.99	129.14	127.99	129.50
BF31-BM1	Circular	B-F31	B-M1	121.25	120.80	1.00	0.00	4.00	303.00	0.15	48	17.70	3.80	129.36	129.20	143.40
BF33-BF77	Circular	B-F33	B-F77	119.34	119.25	1.00	0.00	3.00	95.00	0.09	63	19.11	8.88	127.19	127.14	125.54
BF35-BF33	Circular	B-F35	B-F33	119.47	119.34	1.00	0.00	3.00	125.00	0.10	45	19.08	6.35	127.25	127.19	125.09
BF37-BF35	Circular	B-F37	B-F35	119.57	119.47	1.00	0.00	3.00	100.00	0.10	40	19.13	5.58	127.27	127.25	125.71
BF39-BF37	Circular	B-F39	B-F37	119.77	119.57	1.00	0.00	2.50	200.00	0.10	25	15.57	4.97	127.32	127.27	125.14
BF4-BF2	Natural	B-F4	B-F2	124.50	124.15	1.00	0.00	1.50	768.00	0.05	6	17.13	0.76	125.88	125.71	126.00
BF41-BF39	Circular	B-F41	B-F39	122.44	120.77	1.00	0.00	1.50	10.00	16.70	6	19.13	7.65	127.33	127.32	131.45
BF43-BF39	Circular	B-F43	B-F39	119.82	119.77	1.00	0.00	2.50	50.00	0.10	21	15.60	4.30	127.33	127.32	125.50
BF45-BF41	Circular	B-F45	B-F41	129.04	128.69	1.00	0.00	1.50	100.00	0.35	3	16.01	3.37	129.71	129.29	136.32
BF47-BF43	Circular	B-F47	B-F43	122.04	120.32	1.00	0.00	1.50	141.00	1.22	4	19.13	3.26	127.36	127.33	133.77
BF49-BF47	Circular	B-F49	B-F47	129.84	129.74	1.00	0.00	1.50	100.00	0.10	3	16.01	2.72	130.64	130.34	138.91
BF5-BF7	Natural	B-F5	B-F7	126.60	125.48	1.00	10.00	2.00	595.00	0.19	35	16.69	1.22	127.99	127.24	128.60
BF51-BF43	Circular	B-F51	B-F43	119.91	119.82	1.00	0.00	2.50	90.00	0.10	20	15.53	4.04	127.34	127.33	126.00
BF53-BF51	Circular	B-F53	B-F51	120.12	119.91	1.00	0.00	2.50	210.00	0.10	14	15.85	2.91	127.33	127.34	125.80
BF55-BF53	Circular	B-F55	B-F53	120.24	120.12	1.00	0.00	2.00	120.00	0.10	-15	16.80	3.64	126.88	127.33	125.50
Link444	Circular	B-F55	Node457	0.05	0.00	1.00	0.00	0.05	10.00	0.50	32	16.33	0.00	##########	##########	125.50
BF57-BF55	Circular	B-F57	B-F55	120.34	120.24	1.00	0.00	2.00	101.00	0.10	8	19.14	2.53	126.93	126.88	127.90
BF59-BF57	Circular	B-F59	B-F57	120.51	120.34	1.00	0.00	2.00	165.00	0.10	8	19.14	2.48	127.02	126.93	128.00
BF61-BF59	Circular	B-F61	B-F59	120.62	120.51	1.00	0.00	2.00	105.00	0.10	8	19.14	2.42	127.01	127.02	128.50
BF63-BF61	Natural	B-F63	Node458	123.30	123.26	1.00	5.00	5.10	40.00	0.10	4	19.18	2.14	126.64	126.64	128.91
BF63-BF65	Circular	B-F63	B-F65	123.30	123.00	3.00	0.00	2.50	90.00	0.33	139	17.13	9.41	126.64	125.50	128.91
BF63-BF65	Trapezoidal	B-F63	B-F65	128.41	128.41	1.00	100.00	0.50	92.00	0.00	0	0.00	0.00	125.50	125.50	128.91
BF67-BF11	Rectangular	B-F67	B-F11	117.35	117.29	2.00	7.00	5.00	20.00	0.30	136	17.98	1.93	126.33	125.70	125.10
BF7-BF9	Natural	B-F7	B-F9	125.48	124.22	1.00	10.00	2.50	607.00	0.21	59	16.56	1.68	127.24	126.25	128.00
BF71-BF67	Rectangular	B-F71	B-F67	118.38	117.35	1.00	5.00	5.00	195.00	0.53	108	18.10	4.37	125.86	126.33	126.00
BF73-BF17	Rectangular	B-F73	B-F17	118.98	118.83	1.00	4.00	4.00	300.00	0.05	68	18.44	4.21	126.93	126.87	126.50
BF75-BF19	Rectangular	B-F75	B-F19	119.13	119.06	1.00	4.00	4.00	150.00	0.05	75	18.41	4.66	126.96	126.95	126.50
BF77-BF81	Circular	B-F77	B-F81	119.25	119.22	1.00	0.00	2.00	25.00	0.12	55	18.30	17.19	127.14	126.98	127.00
BF79-BF75	Rectangular	B-F79	B-F75	119.16	119.13	1.00	4.00	4.00	50.00	0.06	148	18.41	9.22	126.97	126.96	126.50
BF81-BF79	Rectangular	B-F81	B-F79	119.22	119.16	1.00	4.00	4.00	110.00	0.05	92	18.40	5.72	126.98	126.97	126.50
BF9-BF11	Natural	B-F9	B-F11	124.22	122.83	1.00	10.00	2.50	479.00	0.29	81	16.70	2.15	126.25	125.70	127.00
BM1-BM4	Circular	B-M1	B-M4	120.80	120.48	1.00	0.00	4.00	210.00	0.15	53	17.35	4.90	129.20	128.99	132.08
BM10-B26	Circular	B-M10	B26	120.85	120.58	1.00	0.00	1.50	32.00	0.84	8	17.79	4.59	126.23	125.63	126.19
BM11-BM18	Circular	B-M11	B-M18	123.23	121.61	1.00	0.00	1.50	204.00	0.79	7	15.98	4.27	127.04	126.87	127.50
OF BM11	Trapezoidal	B-M11	B-F73	127.00	125.50	1.00	50.00	0.50	50.00	3.00	6	16.37	1.69	127.04	126.93	127.50
BM12-B30	Circular	B-M12	B30	120.40	120.26	1.00	0.00	1.50	38.00	0.37	-14	17.67	6.66	126.82	125.62	126.76
BM14-BM50	Circular	B-M14	B-M50	120.74	119.80	1.00	0.00	2.50	310.00	0.30	18	16.07	3.82	126.58	126.22	128.03
BM16-BM14	Circular	B-M16	B-M14	120.96	120.74	1.00	0.00	2.50	86.00	0.26	25	15.98	4.99	126.68	126.58	127.45
BM18-BM16	Circular	B-M18	B-M16	121.61	120.96	1.00	0.00	2.50	422.00	0.15	15	15.97	3.14	126.87	126.68	133.87
BM2-BM4	Circular	B-M2	B-M4	123.59	122.98	1.00	0.00	1.50	270.00	0.23	11	16.26	6.06	130.91	128.99	135.23
BM20-BM26	Circular	B-M20	B-M26	122.31	121.95	1.00	0.00	2.00	119.00	0.30	11	16.26	3.38	128.81	128.68	134.54
BM22-BM30	Circular	B-M22	B-M30	120.51	120.34	1.00	0.00	2.50	83.00	0.20	17	16.26	3.48	127.75	127.66	131.23
BM24-BM34	Circular	B-M24	B-M34	119.72	119.52	1.00	0.00	2.00	92.00	0.22	13	16.26	4.00	126.22	126.00	129.63
BM26-BM28	Circular	B-M26	B-M28	119.44	118.96	1.00	0.00	4.50	412.00	0.12	67	16.80	4.19	128.68	128.24	128.00
BM28-BM30	Circular	B-M28	B-M30	118.96	118.34	1.00	0.00	4.50	510.00	0.12	67	16.80	4.19	128.24	127.66	129.30
BM3-BM1	Circular	B-M3	B-M1	124.00	123.80	1.00	0.00	2.00	90.00	0.22	11	16.02	4.57	129.27	129.20	130.00
BM30-BM32	Circular	B-M30	B-M32	118.34	117.73	1.00	0.00	4.50	508.00	0.12	79	16.59	4.95	127.66	126.89	127.34
BM32-BM34	Circular	B-M32	B-M34	117.73	117.02	1.00	0.00	4.50	596.00	0.12	79	16.62	4.95	126.89	126.00	128.70
BM34-BM36	Circular	B-M34	B-M36	117.02	116.85	1.00	0.00	4.50	145.00	0.12	90	16.52	5.65	126.00	125.83	127.20
BM36-BM40	Rectangular	B-M36	B-M40	116.85	116.79	2.00	7.00	5.00	18.00	0.33	296	16.66	4.21	125.83	125.89	127.90
BM38-BM36	Rectangular	B-M38	B-M36	117.05	116.85	2.00	7.00	5.00	105.00	0.19	210	16.80	2.98	125.77	125.83	130.07

Table 1.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 1-4

Model: 100YR_SegE_Existing.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span check(ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
BM4-BM6	Circular	B-M4	B-M6	119.98	119.69	1.00	0.00	4.50	191.00	0.15	57	17.18	3.75	128.99	128.85	132.87
BM40-BM42	Rectangular	B-M40	B-M42	116.79	116.75	2.00	7.00	5.00	28.00	0.14	343	16.64	4.88	125.89	125.81	126.90
BM42-BOUT	Rectangular	B-M42	B-OUT	116.75	116.66	2.00	7.00	5.00	45.00	0.20	388	15.91	5.53	125.81	125.29	127.18
BM43-BM44	Circular	B-M43	B-M44	122.38	122.22	1.00	0.00	1.50	78.00	0.21	1	17.71	0.90	126.98	126.98	127.50
BM44-BM56	Circular	B-M44	B-M56	122.22	122.07	1.00	0.00	1.50	96.00	0.16	2	16.01	1.37	126.98	126.96	127.50
BM45-BM46	Circular	B-M45	B-M46	122.68	122.56	1.00	0.00	1.50	78.00	0.15	-1	17.80	0.94	126.99	126.99	128.00
BM46-BM44	Circular	B-M46	B-M44	122.56	122.22	1.00	0.00	1.50	227.00	0.15	2	17.78	1.05	126.99	126.98	127.50
BM48-BM40	Circular	B-M48	B-M40	117.88	116.79	1.00	0.00	3.50	30.00	3.63	47	16.47	5.90	125.90	125.89	127.86
BM50-BM48	Circular	B-M50	B-M48	118.80	117.88	1.00	0.00	3.50	303.00	0.30	43	16.53	4.43	126.22	125.90	128.50
BM52-BM50	Circular	B-M52	B-M50	119.55	119.30	1.00	0.00	3.00	122.00	0.20	26	16.54	3.66	126.36	126.22	130.76
BM54-BM18	Circular	B-M54	B-M18	121.92	121.61	1.00	0.00	2.00	204.00	0.15	8	15.97	2.42	126.95	126.87	140.80
BM56-BM54	Circular	B-M56	B-M54	122.07	121.92	1.00	0.00	1.50	97.00	0.15	2	16.01	1.36	126.96	126.95	140.80
BM6-BM26	Circular	B-M6	B-M26	119.69	119.44	1.00	0.00	4.50	199.00	0.13	62	16.90	3.86	128.85	128.68	131.71
BM8-B20	Circular	B-M8	B20	121.35	121.10	1.00	0.00	1.50	46.00	0.54	6	17.79	3.47	125.80	125.64	127.17
BM9-BM52	Circular	B-M9	B-M52	119.71	119.55	1.00	0.00	3.00	78.00	0.21	-30	15.79	2.75	126.32	126.36	128.20
E131	**Natural**	**B-OUT**	**E131-OUT**	**116.66**	**117.85**	**1.00**	**0.00**	**0.00**	**475.00**	**-0.25**	**362**	**16.82**	**1.30**	**125.29**	**125.21**	**126.98**
C1-to-C3	Circular	C1	C3	154.99	152.54	1.00	0.00	1.50	150.00	1.63	3	16.01	5.77	155.46	153.18	160.21
C2-to-C4	Circular	C2	C4	154.99	152.54	1.00	0.00	1.50	150.00	1.63	3	16.01	5.75	155.46	153.17	160.21
C3-to-C5	Circular	C3	C5	152.54	149.28	1.00	0.00	1.50	200.00	1.63	5	16.01	6.91	153.18	150.07	158.92
C4-to-C6	Circular	C4	C6	152.54	149.28	1.00	0.00	1.50	200.00	1.63	5	16.01	6.72	153.17	150.09	158.50
C5-to-C7	Circular	C5	C7	149.28	143.50	1.00	0.00	1.50	300.00	1.93	8	16.02	8.40	150.07	144.28	155.99
C6-to-C8	Circular	C6	C8	149.28	146.02	1.00	0.00	1.50	200.00	1.63	8	16.02	7.84	150.09	146.83	155.99
C7-to-A-M3	Circular	C7	A-M3	139.00	138.85	1.00	0.00	1.50	50.00	0.30	12	16.02	6.64	140.78	140.17	149.17
C8-to-A-M4	Circular	C8	A-M4	136.50	136.26	1.00	0.00	1.50	80.00	0.30	10	16.02	5.75	138.26	137.50	151.67
D1-D3	Circular	D1	D3	119.88	119.76	1.00	0.00	2.00	141.00	0.09	14	16.64	4.57	124.27	124.10	125.50
D10-D9	Circular	D10	D9	119.05	118.86	1.00	0.00	1.50	75.00	0.25	2	16.03	2.79	123.48	123.39	123.85
D11-D13	Circular	D11	D13	115.89	115.83	1.00	0.00	5.00	146.00	0.04	68	16.27	3.45	123.34	123.23	123.45
D12-D11	Circular	D12	D11	117.65	117.54	1.00	0.00	2.50	75.00	0.15	5	16.03	2.80	123.45	123.34	123.45
D13-D15	Circular	D13	D15	115.83	115.76	1.00	0.00	5.00	146.00	0.05	77	16.27	3.90	123.23	123.12	123.73
D14-D13	Circular	D14	D13	119.26	119.07	1.00	0.00	1.50	75.00	0.25	3	16.03	3.12	123.35	123.23	124.06
D15-D17	Circular	D15	D17	115.76	115.10	1.00	0.00	5.00	306.00	0.22	87	16.27	4.41	123.12	122.84	124.63
D16-D15	Circular	D16	D15	120.16	119.97	1.00	0.00	1.50	75.00	0.25	4	16.01	3.37	123.30	123.12	124.96
D17-D19	Circular	D17	D19	115.10	115.03	1.00	0.00	5.00	116.00	0.06	98	16.27	4.97	122.84	122.71	124.63
D18-D17	Circular	D18	D17	120.16	119.97	1.00	0.00	1.50	75.00	0.25	4	16.26	3.56	123.15	122.84	124.96
D19-D21	Circular	D19	D21	115.03	114.95	1.00	0.00	5.00	115.00	0.07	107	16.27	5.43	122.71	122.56	123.49
D2-D1	Circular	D2	D1	122.50	122.01	1.00	0.00	1.50	115.00	0.43	11	16.65	6.53	124.78	124.27	126.00
D20-D19	Circular	D20	D19	119.02	118.83	1.00	0.00	1.50	75.00	0.25	4	16.26	3.10	122.90	122.71	123.82
D21-D23	Rectangular	D21	D23	114.95	114.89	1.00	5.00	5.00	112.00	0.05	115	16.26	4.59	122.56	122.44	123.40
D22-D21	Circular	D22	D21	118.60	118.41	1.00	0.00	1.50	75.00	0.25	3	16.27	2.92	122.72	122.56	123.40
D23-D25	Rectangular	D23	D25	114.89	114.74	1.00	5.00	5.00	250.00	0.06	132	16.26	5.27	122.44	122.07	122.99
D24-D23	Circular	D24	D23	117.19	116.89	1.00	0.00	2.50	72.00	0.42	8	16.26	3.33	122.52	122.44	122.99
D25-D27	Rectangular	D25	D27	114.74	114.56	1.00	5.00	5.00	275.00	0.07	145	16.26	5.81	122.07	121.56	122.83
D26-D25	Circular	D26	D25	118.36	117.74	1.00	0.00	1.50	72.00	0.86	6	16.26	5.02	122.38	122.07	123.16
D27-D29	Rectangular	D27	D29	114.56	114.37	1.00	5.00	5.00	260.00	0.07	162	16.26	6.45	121.56	120.95	122.78
D28-D27	Circular	D28	D27	118.31	117.56	1.00	0.00	1.50	72.00	1.04	8	16.26	5.73	121.94	121.56	123.11
D29-D31	Rectangular	D29	D31	114.37	114.27	1.00	5.00	5.00	123.00	0.08	169	16.26	6.77	120.95	120.62	122.65
D3-D5	Circular	D3	D5	119.26	119.10	1.00	0.00	2.50	141.00	0.11	22	16.65	4.89	124.10	123.85	124.84
D30-D29	Circular	D30	D29	118.18	117.38	1.00	0.00	1.50	72.00	1.11	5	15.98	4.75	121.07	120.95	122.98
D31-D33	Rectangular	D31	D33	114.27	114.07	1.00	6.00	5.00	352.00	0.06	188	16.26	6.28	120.62	120.17	122.43
D32-D31	Circular	D32	D31	116.63	116.28	1.00	0.00	2.50	71.00	0.49	11	15.98	4.01	120.69	120.62	122.43
D33-D35	Rectangular	D33	D35	114.07	113.90	1.00	6.00	5.00	258.00	0.07	206	16.26	6.87	120.17	119.36	122.71
D34-D33	Circular	D34	D33	117.79	116.59	1.00	0.00	2.00	71.00	1.69	11	15.99	6.63	120.07	120.17	123.04
D35-D37	**Rectangular**	**D35**	**D37**	**112.90**	**112.85**	**1.00**	**6.00**	**6.00**	**107.00**	**0.05**	**221**	**16.26**	**6.13**	**119.37**	**118.85**	**123.57**
D36-D35	Circular	D36	D35	118.77	116.92	1.00	0.00	1.50	71.00	2.61	8	16.25	8.87	119.76	119.37	123.57
D38-D36	Circular	D38	D36	120.50	119.50	1.00	0.00	1.50	73.00	1.37	4	16.01	6.16	121.08	120.08	123.50
D4-D3	Circular	D4	D3	120.37	120.14	1.00	0.00	1.50	92.00	0.25	5	16.00	3.58	124.28	124.10	125.17
D5-D7	Circular	D5	D7	117.98	117.83	1.00	0.00	3.00	166.00	0.09	29	16.56	4.67	123.85	123.60	124.26
D6-D5	Circular	D6	D5	119.79	119.56	1.00	0.00	1.50	87.00	0.26	4	16.03	3.39	123.96	123.85	124.59
D7-D9	Circular	D7	D9	116.83	116.54	1.00	0.00	4.00	261.00	0.11	46	16.36	4.04	123.60	123.39	123.71
D8-D7	Circular	D8	D7	118.46	118.34	1.00	0.00	2.00	80.00	0.15	7	16.00	3.42	123.67	123.60	123.71
D9-D11	Circular	D9	D11	115.92	115.89	1.00	0.00	5.00	106.00	0.03	53	16.34	2.73	123.39	123.35	123.52

Table 1.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 1-4

Model: 100YR_SegE_Existing.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span check(ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
F1-F3	Circular	F1	F3	122.07	121.50	1.00	0.00	2.50	565.00	0.10	22	16.48	4.39	124.88	123.09	127.40
F10-F12	Circular	F10	F12	118.22	117.88	1.00	0.00	4.00	340.00	0.10	23	16.07	3.12	121.28	121.19	126.85
F11-F14	Circular	F11	F14	119.33	118.00	1.00	0.00	4.00	65.00	2.05	44	16.27	11.96	121.12	121.18	124.00
F12-F14	Circular	F12	F14	117.88	117.85	1.00	0.00	4.00	25.00	0.12	27	16.04	4.24	121.19	121.18	126.77
F13-F16	Circular	F13	F16	121.01	118.20	1.00	0.00	2.00	78.00	3.60	8	16.25	9.93	121.77	121.04	126.51
F14-F16	Circular	F14	F16	115.58	115.52	1.00	0.00	5.00	207.00	0.03	69	16.28	3.37	121.18	121.04	127.10
F15-F18	Circular	F15	F18	120.32	118.10	1.00	0.00	2.00	78.00	2.85	14	16.25	10.49	121.46	120.81	125.82
F16-F18	Circular	F16	F18	115.52	115.42	1.00	0.00	5.00	247.00	0.04	81	16.28	3.94	121.04	120.81	126.28
F17-F24	Circular	F17	F24	120.99	118.00	1.00	0.00	2.00	77.00	3.88	6	16.25	7.53	121.55	120.53	126.49
F18-F20	Circular	F18	F20	114.92	114.91	1.00	0.00	5.50	25.00	0.04	101	16.27	4.11	120.81	120.78	125.59
F19-F26	Circular	F19	F26	121.69	121.48	1.00	0.00	2.00	79.00	0.27	5	16.26	3.90	122.61	122.30	127.19
F2-F4	Circular	F2	F4	119.52	119.02	1.00	0.00	3.00	200.00	0.25	3	16.01	1.89	121.37	121.34	126.30
F20-F22	Circular	F20	F22	111.73	111.73	1.00	0.00	4.50	45.00	0.00	101	16.28	6.29	120.78	120.67	121.73
F21-F28	Circular	F21	F28	121.57	121.36	1.00	0.00	2.00	79.00	0.27	4	16.25	3.39	122.31	122.01	127.07
F22-F24	Circular	F22	F24	114.89	114.83	1.00	0.00	5.50	148.00	0.04	101	16.28	4.15	120.67	120.53	121.73
F24-F26	Circular	F24	F26	114.33	114.27	1.00	0.00	6.00	200.00	0.03	109	16.27	3.82	120.53	120.39	126.26
F26-F28	**Circular**	**F26**	**F28**	**114.27**	**114.19**	**1.00**	**0.00**	**6.00**	**250.00**	**0.03**	**117**	**16.27**	**4.11**	**120.39**	**120.19**	**126.97**
F3-F9	Circular	F3	F9	120.00	119.66	1.00	0.00	4.00	340.00	0.10	38	16.27	5.20	122.30	121.33	127.00
F4-F10	Circular	F4	F10	118.52	118.22	1.00	0.00	4.00	300.00	0.10	16	16.06	2.40	121.34	121.28	125.60
F5-F7	Circular	F5	F7	124.31	124.21	1.00	0.00	1.50	100.00	0.10	3	16.01	2.73	125.11	124.81	131.62
F6-F8	Circular	F6	F8	124.07	123.97	1.00	0.00	1.50	100.00	0.10	3	16.01	2.73	124.87	124.57	131.62
F7-F3	Circular	F7	F3	122.29	122.15	1.00	0.00	1.50	39.00	0.36	4	16.01	4.01	123.10	122.90	129.21
F8-F10	Circular	F8	F10	122.05	121.91	1.00	0.00	1.50	39.00	0.36	4	16.01	4.00	122.85	122.66	129.21
F9-F11	Circular	F9	F11	119.66	119.33	1.00	0.00	4.00	16.00	2.06	44	16.27	10.45	121.33	121.12	126.64
Link445	Circular	Node458	B-F61	0.05	0.00	1.00	0.00	0.05	10.00	0.50	4	19.19	7.96	126.64	127.01	128.91
Link445	Circular	Node458	B-F61	0.05	0.00	1.00	0.00	0.05	10.00	0.50	4	19.19	7.96	126.64	127.01	128.91

Table 2.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 5-6

Model: US290_SegD_Sys_StplwySH6_Ext100-adj-JKB.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span check(ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 5																
L-A-10	Circular	A-10	MH-A-3	112.59	112.51	1.00	0.00	4.00	51.00	0.16	68	15.98	5.39	120.67	120.60	124.00
L-A-12	Circular	A-12	A-13	117.82	115.60	2.00	0.00	1.50	42.00	5.29	34	17.17	9.62	121.75	121.69	121.00
L-A-13	Circular	A-13	MH-A-10	114.33	114.02	1.00	0.00	3.00	203.00	0.15	42	17.14	5.92	121.69	121.74	121.00
L-A-14	Circular	A-14	MH-A-10	114.26	114.02	1.00	0.00	3.00	154.00	0.16	19	17.13	2.72	121.90	121.74	123.00
L-A-15	Circular	A-15	A-14	116.88	115.29	1.00	0.00	1.50	398.00	0.40	11	17.21	6.19	122.49	121.90	121.50
L-A-1AB	Rectangular	A-1AB	A-1BB	121.99	121.90	1.00	3.00	2.00	95.00	0.09	36	22.37	5.98	125.89	124.82	128.50
L-A-1AC	Trapezoidal	A-1AC	A-1AB	122.16	121.99	1.00	2.00	4.00	173.00	0.10	35	24.00	1.03	125.91	125.89	129.40
L-A-1AD	Rectangular	A-1AD	A-1AC	122.60	122.16	1.00	8.00	4.00	262.00	0.17	35	24.01	1.25	125.94	125.91	129.80
L-A-1AE	Trapezoidal	A-1AE	A-3AD	128.69	123.00	1.00	2.00	3.00	3195.00	0.18	46	17.69	2.00	131.07	125.99	132.50
L-A-1AF	Trapezoidal	A-1AF	A-1AE	134.00	128.69	1.00	2.00	2.00	5306.00	0.10	23	17.29	1.42	136.34	131.07	137.00
L-A-1BB	Trapezoidal	A-1BB	A-9	121.90	119.60	1.00	2.00	4.00	2801.00	0.08	36	22.89	1.75	124.82	121.10	128.50
L-A-2	Circular	A-2	A-6	119.43	118.76	1.00	0.00	2.50	334.00	0.20	29	17.23	5.82	126.33	125.63	126.00
L-A-2AD	Circular	A-2AD	A-3AD	123.30	123.00	3.00	0.00	3.00	90.25	0.33	-53	17.02	1.44	126.03	125.99	129.70
L-A-3	Circular	A-3	A-2	120.37	119.93	1.00	0.00	2.00	218.00	0.20	21	17.32	6.63	126.88	126.33	126.00
L-A-3AD	Trapezoidal	A-3AD	A-1AD	123.00	122.60	1.00	2.00	4.00	217.00	0.18	35	24.02	1.58	125.99	125.94	129.31
L-A-4	Rectangular	A-4	MH-A-7	113.28	113.02	1.00	9.00	5.00	130.00	0.20	190	16.89	4.22	121.16	120.96	124.00
L-A4-A9	Trapezoidal	A-4	A-9	120.05	119.60	1.00	2.00	3.50	135.00	0.33	6	16.50	0.82	121.16	121.10	124.00
L-A-5	Circular	A-5	A-6	118.16	117.76	1.00	0.00	2.50	199.00	0.20	46	17.43	9.05	125.58	125.65	124.00
L-A-6	Circular	A-6	MH-A-2	117.76	116.16	1.00	0.00	3.50	797.00	0.20	63	17.22	6.46	125.63	124.50	125.50
L-A-7	Rectangular	A-7	E112-01	112.46	112.30	1.00	9.00	5.00	77.00	0.21	403	16.53	8.93	120.51	120.25	123.50
L-A-8	Circular	A-8	MH-A-5	113.98	113.71	1.00	0.00	3.50	132.00	0.20	70	16.25	7.24	121.43	120.88	123.50
L-A-9	Circular	A-9	MH-A-7	113.69	113.51	1.00	0.00	4.00	91.00	0.20	48	16.88	5.16	121.10	120.96	124.00
L-AD-2	Trapezoidal	AD-2	A-7	121.23	121.00	1.00	2.00	2.50	100.00	0.23	31	16.32	3.11	122.99	122.17	125.72
L-AD-3	Trapezoidal	AD-3	AD-4	123.79	122.21	1.00	2.00	2.50	404.00	0.39	32	16.29	1.58	126.05	125.68	126.40
L-AD-4	Trapezoidal	AD-4	AD-5	122.21	121.89	1.00	2.00	3.00	347.00	0.09	38	16.31	1.16	125.68	125.52	126.40
L-AD-5	Trapezoidal	AD-5	AD-5A	121.89	121.41	1.00	2.00	3.00	786.00	0.06	44	16.43	1.33	125.52	125.02	125.40
L-AD-5A	Trapezoidal	AD-5A	A-4	121.41	120.05	1.00	2.00	3.00	776.00	0.18	66	16.72	2.81	125.02	121.72	127.10
L-AD-6	Trapezoidal	AD-6	AD-2	122.00	121.23	1.00	2.00	2.00	713.00	0.11	18	16.28	1.39	123.78	122.99	125.72
L-E112-OUT	**Trapezoidal**	**E112-00**	**E112-OUT**	**110.46**	**110.28**	**1.00**	**10.00**	**9.00**	**150.00**	**0.12**	**402**	**16.55**	**2.81**	**115.90**	**115.72**	**120.00**
L-E112-01	Rectangular	E112-01	E112-00	112.30	110.46	1.00	10.00	5.00	1536.00	0.12	402	16.55	8.03	120.25	115.90	123.00
L-MH-A-10	Circular	MH-A-10	MH-A-9	114.02	113.44	1.00	0.00	4.00	395.00	0.15	50	17.20	3.98	121.74	121.30	122.00
L-MH-A-2	Circular	MH-A-2	A-8	116.16	114.74	1.00	0.00	3.50	1082.00	0.13	61	17.23	6.26	124.50	121.43	124.50
L-MH-A-3	Rectangular	MH-A-3	A-7	112.51	112.46	1.00	9.00	5.00	25.00	0.20	352	16.68	7.80	120.58	120.52	123.19
L-MH-A-4	Rectangular	MH-A-4	MH-A-3	112.68	112.51	1.00	9.00	5.00	85.00	0.20	297	16.77	6.58	120.74	120.60	124.00
L-MH-A-5	Rectangular	MH-A-5	MH-A-4	112.86	112.68	1.00	9.00	5.00	88.00	0.20	297	16.74	6.58	120.88	120.73	126.10
L-MH-A-7	Rectangular	MH-A-7	MH-A-5	113.02	112.86	1.00	9.00	5.00	80.00	0.20	235	16.80	5.21	120.96	120.88	128.23
L-MH-A-9	Circular	MH-A-9	A-10	113.44	112.59	1.00	0.00	4.00	577.00	0.15	51	17.19	4.05	121.30	120.67	122.50
Outfalls 6																
L-A1	Circular	A1	A2	115.92	115.62	1.00	0.00	1.50	93.00	0.32	2	16.01	2.45	116.47	116.32	119.92
L-A10	Circular	A10	A11	111.45	110.76	1.00	0.00	3.00	48.00	1.44	13	16.34	7.13	115.76	115.74	117.61
L-A11	Rectangular	A11	A12	109.76	109.02	1.00	4.00	4.00	800.00	0.09	50	16.27	3.91	115.74	115.15	116.02
L-A12	Rectangular	A12	A13	108.02	107.33	1.00	5.00	5.00	705.00	0.10	94	16.25	3.74	115.15	114.61	115.22
L-A13	Rectangular	A13	A14	107.33	106.49	1.00	5.00	5.00	600.00	0.14	119	16.25	4.75	114.61	114.24	115.52
L-A14	Rectangular	A14	A15	105.49	104.63	1.00	6.00	6.00	1015.00	0.08	139	16.26	3.84	114.24	114.24	114.62
L-A15	Rectangular	A15	E135-03	104.63	104.48	1.00	6.00	6.00	669.00	0.02	181	16.29	5.02	114.24	114.24	112.60
L-A-2A	Trapezoidal	A-1A	A-2A	118.66	118.30	1.00	2.00	3.00	100.00	0.36	23	16.27	2.03	120.31	120.04	125.00
L-A-1A	Trapezoidal	A-1AA	A-1A	120.08	118.66	1.00	2.00	3.00	1203.00	0.12	16	16.27	1.28	121.84	120.31	125.00
L-A2	Circular	A2	A3	115.62	115.32	1.00	0.00	1.50	90.00	0.33	3	16.02	3.52	116.32	116.05	119.62
L-A-5A	Trapezoidal	A-2A	A-5A	118.30	116.90	1.00	2.00	3.00	452.00	0.31	23	16.24	1.28	120.04	119.86	125.00
L-A3	Circular	A3	A4	114.82	114.52	1.00	0.00	2.00	90.00	0.33	4	16.02	3.12	116.05	116.03	119.32
L-A4	Circular	A4	A5	114.52	114.22	1.00	0.00	2.00	90.00	0.33	5	16.03	3.92	116.03	116.00	119.02
L-A5	Circular	A5	A6	114.22	113.92	1.00	0.00	2.00	70.00	0.43	6	16.08	4.49	116.00	115.97	119.18

Table 2.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 5-6

Model: US290_SegD_Sys_StplwySH6_Ext100-adj-JKB.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span check(ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-A-8A	Trapezoidal	A-5A	A-8A	116.90	116.70	1.00	2.00	3.00	597.00	0.03	31	16.30	1.33	119.86	119.72	125.00
L-A6	Circular	A6	A7	113.48	113.12	1.00	0.00	2.50	110.00	0.33	7	16.07	3.72	115.97	115.94	119.48
L-A7	Circular	A7	A8	113.12	112.82	1.00	0.00	2.50	98.00	0.31	9	16.03	4.15	115.94	115.90	118.58
L-A8	Circular	A8	A9	112.82	112.22	1.00	0.00	2.50	193.00	0.31	10	16.01	4.65	115.90	115.79	117.90
L-B-10A	Trapezoidal	A-8A	B-10A	116.70	115.70	1.00	2.00	3.00	805.00	0.12	26	16.32	0.95	119.72	119.54	125.00
L-A9	Circular	A9	A10	111.72	111.45	1.00	0.00	3.00	83.00	0.33	12	16.34	5.50	115.79	115.76	117.82
L-B1	Circular	B1	B2	114.49	112.24	1.00	0.00	2.00	221.00	1.02	14	16.25	7.17	117.07	116.23	118.77
L-B-11A	Trapezoidal	B-10A	B-11A	115.70	115.62	1.00	2.00	3.00	698.00	0.01	37	17.11	1.13	119.54	119.20	125.00
L-B-13A	Trapezoidal	B-11A	B-13A	115.62	114.70	1.00	2.00	3.00	301.00	0.31	57	16.68	1.89	119.20	118.84	125.00
Link980	Circular	B-12A	B-11A	116.50	115.62	1.00	0.00	2.00	72.00	1.22	22	18.12	7.76	119.52	119.20	118.50
L-B-14A	Trapezoidal	B-13A	B-14A	114.70	114.34	1.00	2.00	3.00	301.00	0.12	57	17.01	1.74	118.84	118.48	125.00
L-B-16A	Trapezoidal	B-14A	B-16A	114.34	113.93	1.00	2.00	3.00	520.00	0.08	64	16.92	1.95	118.48	117.70	125.00
L-B-18A	Trapezoidal	B-16A	B-18A	113.93	113.12	1.00	2.00	3.00	653.00	0.12	72	16.84	2.84	117.70	115.32	125.00
L-E13504	Trapezoidal	B-18A	E135-04	113.12	108.90	1.00	2.00	3.00	440.00	0.96	91	16.36	3.65	115.32	114.32	125.00
L-B2	Circular	B2	A11	111.24	110.72	1.00	0.00	3.00	306.00	0.17	28	16.24	4.41	116.23	115.74	116.22
L-C1	Circular	C1	C2	113.62	113.37	1.00	0.00	1.50	78.00	0.32	2	16.08	3.07	115.43	115.41	117.61
L-C2	Circular	C2	C3	112.87	112.30	1.00	0.00	2.00	189.00	0.30	3	16.10	2.13	115.41	115.39	117.82
L-C3	Circular	C3	C4	112.28	112.25	1.00	0.00	2.00	5.00	0.60	5	15.99	2.82	115.39	115.38	117.91
L-C4	Circular	C4	C5	112.25	111.67	1.00	0.00	2.00	187.00	0.31	7	15.98	4.32	115.38	115.24	116.47
L-C5	Circular	C5	C6	111.17	110.87	1.00	0.00	2.50	93.00	0.32	11	16.11	5.92	115.24	115.18	117.99
L-C6	Circular	C6	A12	110.87	109.94	1.00	0.00	2.50	49.00	1.90	11	16.11	7.78	115.18	115.15	117.77
L-D1	Circular	D1	D2	113.72	113.09	1.00	0.00	1.50	203.00	0.31	4	16.09	3.72	115.10	114.88	117.70
L-D2	Circular	D2	D3	112.59	112.27	1.00	0.00	2.00	98.00	0.33	7	16.04	4.05	114.88	114.80	117.62
L-E13504.1	Trapezoidal	D-2A	E135-04	113.05	108.59	1.00	2.00	3.00	160.00	2.79	11	16.05	2.11	114.32	114.32	125.00
L-D3	Circular	D3	D4	112.27	111.99	1.00	0.00	2.00	88.00	0.32	8	16.04	6.09	114.80	114.70	117.31
L-D-2A	Trapezoidal	D-3A	D-2A	113.22	113.05	1.00	2.00	3.00	200.00	0.09	3	16.29	0.84	114.32	114.32	125.00
L-D4	Circular	D4	A13	111.99	109.32	1.00	0.00	2.00	49.00	5.45	11	16.00	10.98	114.70	114.61	118.22
L-D-3A	Trapezoidal	D-4A	D-3A	113.70	113.22	1.00	2.00	3.00	350.00	0.14	3	16.10	0.80	114.46	114.32	125.00
L-E1	Circular	E1	E2	113.22	112.48	1.00	0.00	1.50	180.00	0.41	2	16.08	3.14	114.25	114.25	116.64
E135.1	**Natural**	**E135-02**	**E135-01**	**104.14**	**103.73**	**1.00**	**0.00**	**0.00**	**87.60**	**0.47**	**1132**	**18.40**	**4.27**	**114.22**	**114.21**	**118.83**
E135.2	Natural	E135-03	E135-02	104.48	104.14	1.00	0.00	0.00	61.00	0.56	1130	18.40	4.05	114.24	114.22	116.70
E135.3	Natural	E135-04	E135-03	105.42	104.48	1.00	0.00	10.83	235.00	0.40	1115	18.39	4.44	**114.32**	114.24	125.00
E135.4	Natural	E135-05	E135-04	105.79	105.42	1.00	0.00	0.00	94.00	0.39	1072	18.46	4.48	114.36	114.32	119.00
E135.5	Circular	E135-06	E135-05	105.90	105.79	2.00	0.00	7.00	63.00	0.17	759	20.52	9.72	116.38	114.36	117.00
E135.5	Natural	E135-06	E135-05	113.94	113.94	1.00	0.00	0.00	63.00	0.00	294	18.43	3.50	116.38	115.78	117.00
E135.5	Natural	E135-06	E135-05	113.94	113.94	1.00	0.00	0.00	63.00	0.00	294	18.43	3.50	116.38	115.78	117.00
E135.6	Natural	E135-07	E135-06	106.02	105.90	1.00	0.00	0.00	74.00	0.17	1019	18.43	3.40	116.40	116.38	117.05
E135.7	Natural	E135-08	E135-07	106.80	106.02	1.00	0.00	0.00	463.00	0.17	1099	17.11	2.96	116.51	116.40	117.00
L-E2	Circular	E2	E3	111.98	111.72	1.00	0.00	2.00	185.00	0.14	4	16.13	3.28	114.25	114.24	116.32
L-E3	Circular	E3	A14	111.72	108.35	1.00	0.00	2.00	48.00	7.02	10	16.13	9.00	114.24	114.24	116.21
L-E4	Circular	E4	E3	112.42	111.72	1.00	0.00	1.50	90.00	0.78	3	16.13	4.42	114.24	114.24	116.42
E535.2	Circular	E535-02	E135-07	107.00	106.02	1.00	0.00	2.00	90.00	1.09	25	27.30	7.99	116.41	116.40	117.00
E535.2	Circular	E535-02	E135-07	0.05	0.00	1.00	0.00	0.05	10.00	0.50	891	27.30	0.00	##########	##########	117.00
E535.2	Circular	E535-02	E135-07	0.05	0.00	1.00	0.00	0.05	10.00	0.50	891	27.30	0.00	##########	##########	117.00
L-F1	Circular	F1	F2	111.52	111.06	1.00	0.00	1.50	105.00	0.44	3	16.25	3.00	114.24	114.24	115.66
L-F2	Circular	F2	F3	111.06	110.64	1.00	0.00	1.50	98.00	0.43	5	16.24	4.18	114.24	114.24	115.18
L-F3	Circular	F3	F4	110.14	109.72	1.00	0.00	2.00	98.00	0.43	8	16.24	4.17	114.24	114.24	114.83
L-F4	Circular	F4	F5	109.72	108.86	1.00	0.00	2.00	205.00	0.42	9	16.23	4.29	114.24	114.24	115.22
L-F5	Circular	F5	F6	108.36	107.96	1.00	0.00	2.50	98.00	0.41	10	16.23	4.09	114.24	114.24	114.80
L-F6	Circular	F6	A15	107.96	106.23	1.00	0.00	2.50	48.00	3.60	16	15.71	4.79	114.24	114.24	114.25
L-F7	Circular	F7	F6	110.32	108.96	1.00	0.00	1.50	160.00	0.85	5	16.00	4.97	114.24	114.24	114.33
L-G1	Circular	G1	G2	110.64	110.41	1.00	0.00	1.50	70.00	0.33	3	16.00	3.43	114.22	114.22	114.61
L-G2	Circular	G2	E135-02	110.41	109.94	1.00	0.00	1.50	155.00	0.30	3	16.10	3.54	114.22	114.22	115.05
L-L1	Circular	L1	L2	111.82	111.52	1.00	0.00	1.50	95.00	0.32	-3	21.14	1.64	114.87	114.69	115.82
L-L2	Circular	L2	L3	111.52	111.22	1.00	0.00	1.50	93.00	0.32	-4	21.27	3.01	114.69	114.37	115.52
L-L3	Circular	L3	L4	110.22	109.92	1.00	0.00	2.50	95.00	0.32	16	16.22	4.49	114.37	114.28	115.30
L-L4	Circular	L4	L5	109.92	109.29	1.00	0.00	2.50	203.00	0.31	17	16.22	4.82	114.28	114.23	115.53
L-L5	Circular	L5	L6	108.79	108.46	1.00	0.00	3.00	100.00	0.33	18	16.22	3.93	114.23	114.23	115.51
L-L6	Circular	L6	L7	108.46	108.16	1.00	0.00	3.00	90.00	0.33	19	16.22	3.66	114.23	114.23	115.18
L-L7	Circular	L7	L8	108.16	107.83	1.00	0.00	3.00	103.00	0.32	20	16.22	3.26	114.23	114.23	114.88

Table 2.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 5-6

Model: US290_SegD_Sys_StplwySH6_Ext100-adj-JKB.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span check(ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-L8	Circular	L8	L9	107.83	107.62	1.00	0.00	3.00	65.00	0.32	23	16.22	3.24	114.23	114.22	114.60
L-L9	Circular	L9	E135-02	107.62	107.02	1.00	0.00	3.00	193.00	0.31	25	16.22	3.58	114.22	114.22	115.06
L-M1	Circular	M1	L3	110.80	110.72	1.00	0.00	2.00	32.00	0.25	12	16.27	5.15	114.43	114.37	114.80
L-E13505	Trapezoidal	ML-D1	E135-05	110.50	107.50	1.00	2.00	4.00	50.00	6.00	268	16.61	7.21	114.37	114.36	120.00
L-ML-D1	Trapezoidal	ML-D3	ML-D1	116.20	110.50	1.00	2.00	2.00	2833.00	0.20	49	21.27	3.07	125.74	114.37	120.11
L-ML-D3	Trapezoidal	ML-D4	ML-D3	119.97	116.20	1.00	2.00	2.00	3771.00	0.10	22	21.99	1.41	129.33	125.74	125.51
L-ML-D4	Trapezoidal	ML-D5	ML-D4	122.17	119.97	1.00	2.00	4.00	2955.00	0.07	69	16.21	1.68	129.46	129.33	128.50
L-ML-D5	Rectangular	ML-D6	ML-D5	122.59	122.17	1.00	8.00	4.00	322.00	0.13	80	16.29	2.99	129.49	129.46	128.50
L-ML-D6	Trapezoidal	ML-D7	ML-D6	127.66	122.59	1.00	2.00	4.00	3453.00	0.15	53	17.57	1.76	130.10	129.49	132.00
L-ML-D7	Trapezoidal	ML-D8	ML-D7	132.98	127.66	1.00	2.00	2.00	5321.09	0.10	22	17.29	1.37	134.97	130.10	137.14

Table 3.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 7-8

Model: E127EXISTING100.XP & HHR_US290_SEGC_SYS_BW8(0)_EXT100 **40064.00**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 7																
L-CA-11	Circular	CA-11	CT-11	102.94	101.28	1	0.00	1.50	48.00	3.46	7.15	15.86	3.98	109.52	109.51	107.44
L-CA-12	Circular	CA-12	CT-12	103.21	101.84	1	0.00	1.50	48.00	2.85	-7.12	16.66	2.97	109.51	109.51	107.71
L-CA-13	Circular	CA-13	CT-13	103.25	101.92	1	0.00	1.50	48.00	2.77	-7.10	16.67	2.83	109.51	109.51	107.75
L-CA-15	Circular	CA-15	CT-15	102.83	102.01	1	0.00	1.50	48.00	1.71	10.18	15.75	5.68	109.53	109.52	107.33
L-CA-17	Circular	CA-17	CT-17	103.06	102.09	1	0.00	1.50	48.00	2.02	-7.10	16.67	3.17	109.56	109.55	107.56
L-CA-18	Circular	CA-18	CT-18	103.52	102.17	1	0.00	1.50	48.00	2.81	8.55	16.03	4.76	109.57	109.57	108.02
L-CA-19	Circular	CA-19	CT-19	103.31	102.21	1	0.00	1.50	48.00	2.29	-5.28	16.69	2.50	109.57	109.57	107.81
L-CA-20	Circular	CA-20	CT-20	103.11	102.24	1	0.00	1.50	48.00	1.81	-7.41	16.68	3.02	109.57	109.57	107.61
L-CA-21	Circular	CA-21	CT-21	102.90	102.27	1	0.00	1.50	48.00	1.31	6.49	22.21	3.61	109.58	109.58	107.40
L-CA-22	Circular	CA-22	CT-22	102.68	102.31	1	0.00	1.50	48.00	0.77	-8.40	16.59	3.98	109.58	109.58	107.18
L-CA-23	Circular	CA-23	CT-23	102.51	102.01	1	0.00	1.50	48.00	1.04	-8.77	16.58	4.21	109.59	109.59	107.01
L-CA-24	Circular	CA-24	CT-24	102.42	102.04	1	0.00	1.50	48.00	0.79	-8.93	16.57	4.67	109.59	109.59	106.92
L-CA-25	Circular	CA-25	CT-25	102.67	102.09	1	0.00	1.50	48.00	1.21	7.10	22.41	3.95	109.60	109.60	107.17
L-CA-26	Circular	CA-26	CT-26	102.87	102.45	1	0.00	1.50	48.00	0.88	0.75	16.02	0.42	109.60	109.60	113.37
L-CA-27	Circular	CA-27	CT-27	102.86	102.51	1	0.00	1.50	48.00	0.73	-7.45	16.67	3.69	109.61	109.61	107.36
L-CA-31	Circular	CA-31	CT-30	102.53	102.30	1	0.00	1.50	48.00	0.48	10.33	16.76	5.71	109.80	109.64	107.03
L-CA-32	Circular	CA-32	CT-32	102.46	102.11	1	0.00	1.50	48.00	0.73	9.56	22.79	5.32	109.67	109.67	106.96
L-CA-33	Circular	CA-33	CT-33	102.15	101.97	1	0.00	1.50	48.00	0.38	20.92	17.18	11.50	111.31	109.69	106.65
L-CA-34	Circular	CA-34	CT-34	102.38	102.02	1	0.00	1.50	48.00	0.75	10.08	22.93	5.62	109.69	109.69	106.88
L-CA-35	Circular	CA-35	CT-36	102.45	102.10	1	0.00	1.50	48.00	0.73	9.84	22.93	5.49	109.82	109.70	106.95
L-CA-36	Circular	CA-36	CT-37	102.24	102.09	1	0.00	1.50	48.00	0.31	14.84	23.07	8.29	109.70	109.70	106.74
L-CA-37	Circular	CA-37	CT-39	102.21	101.75	1	0.00	1.50	48.00	0.96	7.12	15.84	3.96	109.71	109.70	107.71
L-CA-4	Circular	CA-4	CT-3	102.72	101.44	1	0.00	1.50	48.00	2.67	13.21	15.86	7.36	109.65	109.48	107.72
L-CA-6	Circular	CA-6	CT-5	102.39	101.51	1	0.00	1.50	48.00	1.83	10.25	15.71	5.72	109.60	109.49	106.89
L-CA-8	Circular	CA-8	CT-7	102.99	101.58	1	0.00	1.50	48.00	2.94	6.44	21.65	3.58	109.50	109.49	107.49
L-CA-9	Circular	CO-9	CN-2	107.34	107.16	1	0.00	2.50	45.00	0.40	28.55	16.02	6.30	112.91	112.85	112.22
L-CB-1	Circular	CB-1	CB-2	103.79	103.42	1	0.00	1.50	39.00	0.95	2.59	16.26	1.44	109.53	109.53	108.79
L-CB-10	Circular	CB-10	CT-18	103.76	101.64	1	0.00	2.00	200.00	1.06	8.69	15.85	2.74	109.57	109.57	107.70
L-CB-11	Circular	CB-11	CT-23a	103.99	102.35	1	0.00	1.50	232.00	0.71	4.01	16.26	2.24	109.59	109.59	108.99
L-CB-14	Circular	CB-14	CT-27A	103.23	102.00	1	0.00	2.00	187.00	0.66	12.40	15.94	3.90	109.62	109.61	108.29
L-CB-15	Circular	CB-15	CB-14	103.99	103.73	1	0.00	1.50	45.00	0.58	3.35	16.26	1.87	109.62	109.62	109.00
L-CB-16	Circular	CB-16	CB-19	103.05	101.57	1	0.00	2.00	160.00	0.93	23.19	16.26	7.27	110.36	109.66	113.85
L-CB-17	Circular	CB-17	CB-16	104.11	103.55	1	0.00	1.50	60.00	0.93	4.68	17.26	2.60	110.39	110.36	109.11
L-CB-18	Circular	CB-18	CT-30	102.07	102.00	1	0.00	1.50	12.00	0.58	1.25	23.09	0.70	109.64	109.64	113.85
L-CB-19	Circular	CB-19	CT-31	101.07	101.00	1	0.00	2.50	12.00	0.58	23.18	16.26	4.66	109.66	109.66	113.85
L-CB-2	Circular	CB-2	CT-3	102.92	101.12	1	0.00	2.00	193.00	0.93	11.21	15.73	3.54	109.53	109.48	107.03
L-CB-26	Circular	CB-26	CT-37	101.57	101.50	1	0.00	2.00	12.00	0.58	3.72	23.21	1.18	109.70	109.70	125.54
L-CB-28	Circular	CB-28	CB-29	122.00	121.63	1	0.00	1.50	24.00	1.54	2.74	16.01	6.39	122.49	122.01	127.50
L-CB-29	Circular	CB-29	CB-26	121.63	119.16	1	0.00	1.50	68.00	3.63	2.74	16.01	7.93	122.01	119.53	126.50
L-CB-3	Circular	CB-3	CB-4	103.99	103.61	1	0.00	1.50	39.00	0.97	2.46	16.26	1.38	109.50	109.50	108.99
L-CB-4	Circular	CB-4	CT-8	103.11	101.10	1	0.00	2.00	193.00	1.04	6.77	21.65	2.13	109.50	109.49	107.25
L-CB-5	Circular	CB-5	CB-6	103.99	103.60	1	0.00	1.50	39.00	1.00	2.46	16.26	1.38	109.52	109.52	108.99
L-CB-6	Circular	CB-6	CT-11a	103.14	101.28	1	0.00	2.00	193.00	0.96	6.84	21.68	2.15	109.52	109.51	107.25
L-CB-7	Circular	CB-7	CB-8	103.99	103.67	1	0.00	1.50	39.00	0.82	2.51	16.26	1.40	109.53	109.53	108.99
L-CB-8	Circular	CB-8	CT-14a	103.17	101.46	1	0.00	2.00	193.00	0.89	7.60	15.79	2.40	109.53	109.52	107.25
L-CB-9	Circular	CB-9	CB-10	103.99	103.76	1	0.00	1.50	32.00	0.72	2.72	16.26	1.52	109.57	109.57	108.99
L-CN-1	Circular	CN-1	CN-2	107.94	107.16	1	0.00	2.50	486.00	0.16	11.41	15.79	3.40	112.95	112.85	111.19
L-CN-2	Rectangular	CN-2	CN-3	105.66	105.16	1	4.00	4.00	315.00	0.16	36.57	15.80	2.95	112.85	112.81	110.69
L-CN-3	Rectangular	CN-3	CN-4	105.16	104.52	1	4.00	4.00	400.00	0.16	30.35	19.22	2.24	112.81	112.75	110.61
L-CN-4	Rectangular	CN-4	CN-5	104.52	103.72	1	4.00	4.00	500.00	0.16	69.74	15.86	4.48	112.75	112.15	110.28
L-CN-5	Rectangular	CN-5	CN-6	103.72	102.76	1	4.00	4.00	600.00	0.16	70.00	18.36	4.35	112.15	111.38	110.00
L-CN-6	Rectangular	CN-6	CN-7	102.76	102.12	1	4.00	4.00	395.00	0.16	72.92	18.22	4.53	111.38	110.83	110.00
L-CN-7	Rectangular	CN-7	CN-8	101.12	99.56	1	5.00	5.00	980.00	0.16	113.86	15.97	4.54	110.83	110.07	109.60
L-CN-8	Rectangular	CN-8	CN-9	99.56	98.93	1	5.00	5.00	390.00	0.16	128.12	16.01	5.11	110.07	109.72	107.53

Table 3.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 7-8

Model: E127EXISTING100.XP & HHR_US290_SEGC_SYS_BW8(0)_EXT100 **40064.00**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-CO-1	Circular	CO-1	CO-3	110.70	110.09	1	0.00	1.50	185.00	0.33	2.27	15.80	2.43	112.93	112.92	114.30
L-CO-10	Circular	CO-10	CO-9	109.00	108.34	1	0.00	1.50	110.00	0.60	10.32	15.88	5.80	113.78	112.91	112.48
L-CO-3	Circular	CO-3	CO-5	109.59	109.00	1	0.00	2.00	181.00	0.33	8.04	15.80	3.70	112.92	112.91	114.20
L-CO-5	Circular	CO-5	CO-9	108.50	107.34	1	0.00	2.50	363.00	0.32	-7.72	15.76	1.84	112.91	112.91	114.04
L-CP-1	Circular	CP-1	CP-2	108.75	108.45	1	0.00	1.50	93.00	0.32	-2.02	16.52	1.83	113.05	113.05	112.11
L-CP-2	Circular	CP-2	CP-3	107.95	107.35	1	0.00	2.00	190.00	0.32	8.43	15.93	3.58	113.05	112.95	112.56
L-CP-3	Circular	CP-3	CP-4	107.35	107.05	1	0.00	2.00	93.00	0.32	8.42	15.93	2.86	112.95	112.90	112.16
L-CP-4	Circular	CP-4	CN-4	107.05	106.52	1	0.00	2.00	30.00	1.77	28.96	15.94	10.24	112.90	112.75	111.78
L-CP-5	Circular	CP-5	CP-4	108.28	107.55	1	0.00	1.50	93.00	0.78	8.60	15.76	5.76	113.21	112.90	112.00
L-CP-6	Circular	CP-6	CP-5	109.00	108.28	1	0.00	1.50	97.00	0.74	8.61	15.79	5.75	113.61	113.21	112.30
L-CQ-1	Circular	CQ-1	CQ-3	108.22	107.88	1	0.00	1.50	115.00	0.30	3.08	17.83	1.74	112.88	112.88	112.16
L-CQ-10	Circular	CQ-10	CQ-9	108.55	108.27	1	0.00	1.50	85.00	0.33	4.59	16.26	3.68	110.92	110.91	110.65
L-CQ-2	Circular	CQ-3	CQ-5	107.38	106.52	1	0.00	2.00	275.00	0.31	11.91	17.51	4.24	112.88	112.42	111.61
L-CQ-5	Circular	CQ-5	CQ-7	106.02	105.12	1	0.00	2.50	300.00	0.30	20.70	15.89	4.44	112.42	111.89	111.88
L-CQ-7	Circular	CQ-7	CQ-8	105.12	104.48	1	0.00	2.50	210.00	0.30	28.80	16.20	5.81	111.89	111.10	111.58
L-CQ-8	Circular	CQ-8	CQ-9	103.98	103.50	1	0.00	3.00	153.00	0.31	30.45	16.21	4.28	111.10	110.91	111.39
L-CQ-9	Circular	CQ-9	CN-7	103.50	103.12	1	0.00	3.00	58.00	0.66	35.87	16.26	5.03	110.91	110.83	111.37
L-CR-1	Circular	CR-1	CR-3	107.50	106.88	1	0.00	1.50	155.00	0.40	3.93	16.01	3.80	110.10	110.09	110.40
L-CR-3	Circular	CR-3	CR-5	106.38	105.06	1	0.00	2.00	330.00	0.40	8.28	16.01	4.19	110.09	110.07	109.90
L-CR-5	Circular	CR-5	CR-6	104.56	103.94	1	0.00	2.50	155.00	0.40	10.81	16.01	4.33	110.07	110.07	110.59
L-CR-6	Circular	CR-6	CN-8	103.94	102.06	1	0.00	2.50	50.00	3.76	16.24	15.57	4.92	110.07	110.07	110.45
L-CR-8	Circular	CR-8	CR-6	105.77	104.94	1	0.00	1.50	165.00	0.50	4.08	19.77	3.44	110.08	110.07	108.83
L-CS-1	Circular	CS-1	CS-2	108.50	107.70	1	0.00	2.50	195.00	0.41	21.52	19.49	5.47	113.91	113.43	112.10
L-CS-2	Circular	CS-2	CN-4	107.70	105.70	1	0.00	2.50	226.00	0.88	26.58	19.49	6.40	113.43	112.75	112.10
L-CT-1	Rectangular	CT-1	CT-98	98.93	98.87	2	7.00	4.00	114.00	0.05	165.61	21.71	2.94	109.46	109.46	194.50
L-CT-10	Rectangular	CT-10	CT-9	99.42	99.37	2	7.00	4.00	100.00	0.05	137.06	21.74	2.43	109.50	109.50	106.92
L-CT-11	Rectangular	CT-11	CT-10	99.46	99.42	2	7.00	4.00	90.00	0.04	129.88	21.87	2.31	109.51	109.50	194.50
L-CT-11a	Rectangular	CT-11a	CT-11	99.48	99.46	2	7.00	4.00	30.00	0.07	124.34	21.98	2.21	109.51	109.51	194.50
L-CT-12	Rectangular	CT-12	CT-11a	99.51	99.48	2	7.00	4.00	60.00	0.05	118.99	21.98	2.11	109.51	109.51	194.50
L-CT-13	Rectangular	CT-13	CT-12	99.59	99.51	2	7.00	4.00	170.00	0.05	118.77	22.00	2.11	109.51	109.51	194.50
L-CT-14	Rectangular	CT-14a	CT-13	99.66	99.59	2	7.00	4.00	148.94	0.05	118.65	22.00	2.11	109.52	109.51	194.50
L-CT-15	Rectangular	CT-15	CT-14a	99.68	99.66	2	5.00	4.00	33.00	0.06	113.00	22.02	2.81	109.52	109.52	107.20
L-CT-17	Rectangular	CT-17	CT-15	99.76	99.68	2	5.00	4.00	160.00	0.05	103.02	22.12	5.12	109.55	109.52	194.50
L-CT-18	Rectangular	CT-18	CT-17	99.84	99.76	1	8.00	4.00	155.00	0.05	101.99	22.21	3.17	109.57	109.55	194.50
L-CT-19	Rectangular	CT-19	CT-18	99.88	99.84	1	8.00	4.00	70.00	0.06	100.20	22.36	3.12	109.57	109.57	194.50
L-CT-20	Rectangular	CT-20	CT-19	99.91	99.88	1	8.00	4.00	65.00	0.05	100.20	22.36	3.12	109.57	109.57	194.50
L-CT-21	Rectangular	CT-21	CT-20	99.94	99.91	1	8.00	4.00	70.00	0.04	99.35	22.36	3.09	109.58	109.57	194.50
L-CT2-1	Circular	CT2-1	CT2-2	105.84	105.46	1	0.00	1.50	90.00	0.42	2.73	16.26	2.08	109.44	109.44	108.82
L-CT-22	Rectangular	CT-22	CT-21	99.98	99.94	1	8.00	4.00	72.00	0.06	98.11	22.44	3.05	109.58	109.58	194.50
L-CT2-2	Circular	CT2-2	6832.00	105.46	104.66	1	0.00	1.50	198.00	0.40	4.61	16.26	3.17	109.44	109.43	109.33
L-CT-23	Rectangular	CT-23	CT-22	100.01	99.98	1	8.00	4.00	58.00	0.05	91.23	22.44	2.84	109.59	109.58	194.50
L-CT-23a	Rectangular	CT-23a	CT-23	100.02	100.01	1	8.00	4.00	20.00	0.05	83.72	22.44	2.60	109.59	109.59	194.50
L-CT-24	Rectangular	CT-24	CT-23a	100.04	100.02	1	8.00	4.00	35.00	0.06	83.66	22.44	2.60	109.59	109.59	194.50
L-CT-25	Rectangular	CT-25	CT-24	100.09	100.04	1	8.00	4.00	105.00	0.05	76.25	22.44	2.37	109.60	109.59	194.50
L-CT-26	Rectangular	CT-26	CT-25	100.12	100.09	1	7.00	4.00	70.00	0.04	74.80	22.74	2.66	109.60	109.60	194.50
L-CT-27	Rectangular	CT-27	CT-26	100.18	100.12	1	7.00	4.00	120.00	0.05	75.00	22.74	2.67	109.61	109.60	194.50
L-CT-27a	Rectangular	CT-27A	CT-27	100.20	100.18	1	7.00	4.00	30.00	0.07	75.19	22.74	2.68	109.61	109.61	194.50
L-CT-29	Rectangular	CT-29	CT-27A	100.27	100.20	1	6.00	4.00	162.79	0.04	75.28	22.74	3.13	109.63	109.61	194.50
L-CT-3	Rectangular	CT-3	CT-1	99.11	99.02	2	7.00	4.00	264.00	0.03	165.61	21.71	2.94	109.48	109.46	194.50
L-CT-30	Rectangular	CT-30	CT-29	100.30	100.27	1	5.00	4.00	69.00	0.04	75.33	22.74	3.75	109.64	109.63	194.50
L-CT-31	Rectangular	CT-31	CT-30	100.37	100.30	1	5.00	4.00	122.00	0.06	69.75	22.80	3.48	109.66	109.64	194.50
L-CT-32	Rectangular	CT-32	CT-31	100.41	100.37	1	4.00	4.00	88.00	0.05	69.83	22.80	4.35	109.67	109.66	194.50
L-CT-33	Rectangular	CT-33	CT-32	100.41	100.41	1	4.00	4.00	116.00	0.00	62.49	22.92	3.89	109.69	109.67	106.40
L-CT-34	Rectangular	CT-34	CT-33	100.52	100.41	1	4.00	4.00	99.00	0.11	40.04	22.94	2.49	109.69	109.69	194.50
L-CT-35	Rectangular	CT-35	CT-34	100.55	100.52	1	4.00	4.00	75.00	0.04	30.05	22.95	1.87	109.69	109.69	194.50
L-CT-36	Circular	CT-36	CT-35	100.60	100.55	1	0.00	4.00	100.00	0.05	30.04	22.95	2.38	109.70	109.69	194.50
L-CT-37	Circular	CT-37	CT-36	100.65	100.60	1	0.00	4.00	100.00	0.05	27.84	23.01	2.21	109.70	109.70	106.50
L-CT-38	Circular	CT-38	CT-37	101.20	101.15	1	0.00	3.50	100.00	0.05	16.41	16.08	1.70	109.70	109.70	194.50
L-CT-39	Circular	CT-39	CT-38	101.75	101.70	1	0.00	3.00	100.00	0.05	7.11	15.84	1.00	109.70	109.70	194.50
L-CT-5	Rectangular	CT-5	CT-3	99.18	99.11	2	7.00	4.00	127.27	0.05	156.52	21.73	2.78	109.49	109.48	194.50

Table 3.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 7-8

Model: E127EXISTING100.XP & HHR_US290_SEGC_SYS_BW8(0)_EXT100 **40064.00**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-CT-7	Rectangular	CT-7	CT-5	99.25	99.18	2	7.00	4.00	127.27	0.05	149.51	21.73	2.65	109.49	109.49	194.50
L-CT-8	Rectangular	CT-8	CT-7	99.30	99.25	2	7.00	4.00	90.00	0.06	143.53	21.73	2.55	109.49	109.49	194.50
L-CT-9	Rectangular	CT-9	CT-8	99.37	99.30	2	7.00	4.00	140.00	0.05	137.06	21.74	2.43	109.50	109.49	194.50
L-CT-97	Rectangular	CT-98	CT-99	98.87	98.81	2	7.00	4.00	116.00	0.05	178.27	15.77	3.17	109.46	109.45	194.50
L-CT-98	Rectangular	CT-99	6863.30	98.81	98.45	2	7.00	4.00	116.00	0.31	186.15	15.77	3.31	109.45	109.44	194.50
L-CU-2	Circular	CU-2	CU-3	105.12	104.85	1	0.00	1.50	83.00	0.33	9.79	16.06	5.49	110.07	109.72	108.54
L-CU-3	Circular	CU-3	6832.00	104.35	103.46	1	0.00	2.00	296.00	0.30	13.39	15.93	4.24	109.72	109.43	108.11
Link587	Natural	7253.30	7216.80	99.47	99.44	1	0.00	0.00	36.50	0.08	1002.61	16.53	5.51	109.80	109.52	112.56
Link588	Natural	7185.00	7185(ml)	98.45	98.45	1	0.00	0.00	70.00	0.00	1051.54	16.58	1.77	109.52	109.50	112.55
Link589	Natural	6863.30	6832.00	98.45	98.77	1	0.00	0.00	31.30	-1.02	1202.42	16.58	2.09	109.44	109.43	112.55
Link590	Natural	6832.00	6325.00	98.77	97.83	1	0.00	0.00	507.00	0.19	1196.65	17.63	2.92	109.43	108.87	112.84
Link615	Circular	X-21	RD-1	106.77	106.44	1	0.00	2.50	33.00	1.00	22.18	21.59	4.35	109.62	109.57	109.50
Link616	Circular	X-22	RD-1	106.77	106.44	1	0.00	2.50	33.00	1.00	32.88	22.18	6.44	109.63	109.57	109.50
Link617	Circular	X-23	RD-1	106.77	106.44	1	0.00	2.50	33.00	1.00	32.88	22.18	6.44	109.63	109.57	109.50
Link618	Circular	X-24	RD-1	106.77	106.44	1	0.00	2.50	33.00	1.00	25.61	21.86	4.99	109.62	109.57	109.50
Link619	Circular	X-25	RD-2	105.63	105.30	1	0.00	2.50	33.00	1.00	39.26	22.23	7.97	109.70	109.57	109.50
Link620	Circular	X-26	RD-2	105.63	105.30	1	0.00	2.50	33.00	1.00	38.43	22.25	7.80	109.73	109.57	109.50
Link621	Circular	X-27	RD-2	105.63	105.30	1	0.00	2.50	33.00	1.00	38.77	22.33	7.87	109.70	109.57	109.50
Link622	Circular	X-28	RD-5	104.45	104.12	1	0.00	2.00	33.00	1.00	20.63	21.11	6.50	109.69	109.55	109.50
Link623	Circular	X-29	RD-5	104.45	104.12	1	0.00	2.00	33.00	1.00	21.99	22.31	6.95	109.55	109.55	108.50
Link624	Circular	X-30	RD-5	104.45	104.12	1	0.00	2.00	33.00	1.00	21.99	22.31	6.95	109.55	109.55	108.50
Link625	Circular	X-31	RD-5	104.45	104.12	1	0.00	2.00	33.00	1.00	21.99	22.31	6.95	109.55	109.55	108.50
Link626	Circular	X-32	RD-6	103.22	102.89	1	0.00	2.00	33.00	1.00	17.42	20.84	5.47	109.68	109.55	109.50
Link627	Circular	X-33	RD-6	103.22	102.89	1	0.00	2.00	33.00	1.00	19.64	20.91	6.17	109.66	109.55	109.50
Link628	Circular	X-34	RD-6	103.22	102.89	1	0.00	2.00	33.00	1.00	20.40	20.94	6.40	109.67	109.55	109.50
Link629	Circular	X-35	RD-6	103.22	102.89	1	0.00	2.00	33.00	1.00	27.94	21.05	8.77	109.72	109.55	109.50
Link630	Circular	X-36	RD-7	102.16	101.83	1	0.00	2.00	33.00	1.00	22.21	20.69	6.95	109.67	109.53	109.50
Link631	Circular	X-37	RD-7	102.16	101.83	1	0.00	2.00	33.00	1.00	21.35	20.13	6.68	109.67	109.53	109.50
Link632	Circular	X-38	RD-7	102.16	101.83	1	0.00	2.00	33.00	1.00	22.11	20.69	6.92	109.70	109.53	109.50
Link633	Circular	X-39	RD-7	102.16	101.83	1	0.00	2.00	33.00	1.00	20.65	19.93	6.46	109.70	109.53	109.50
Link634	Circular	X-43	RD-8	102.27	101.94	1	0.00	2.00	33.00	1.00	2.04	16.27	0.64	109.83	109.83	109.50
Link635	Circular	X-42	RD-8	102.27	101.94	1	0.00	2.00	33.00	1.00	2.14	16.27	0.67	109.83	109.83	109.50
Link636	Circular	X-41	RD-8	102.27	101.94	1	0.00	2.00	33.00	1.00	2.14	16.24	0.67	109.83	109.83	109.50
Link637	Circular	X-40	RD-8	102.27	101.94	1	0.00	2.00	33.00	1.00	3.90	16.25	1.22	109.83	109.83	109.50
Link649	Circular	RD-8	7185.00	100.94	100.30	1	0.00	4.00	636.00	0.10	22.95	16.01	1.82	109.83	109.52	109.50
Link652	Circular	RD-9	RD-8	102.29	100.94	1	0.00	2.00	1352.00	0.10	10.89	15.55	3.43	110.67	109.83	109.50
Link653	Circular	RD-10	RD-9	103.38	102.29	1	0.00	2.00	1087.00	0.10	6.38	15.54	2.00	110.91	110.67	109.50
Link655	Natural	7216.80	7185.00	99.44	98.45	1	0.00	0.00	31.80	3.11	1167.19	16.52	5.29	109.52	109.52	112.55
Link656	Trapezoidal	CS-5	7185(ml)	108.75	108.50	1	5.00	1.00	250.00	0.10	19.95	17.16	2.63	111.53	109.50	110.50
Link657	Trapezoidal	CS-6	7185(ml)	108.65	108.50	1	4.00	1.00	150.00	0.10	10.13	16.29	1.98	109.98	109.50	110.50
Link658	Trapezoidal	CS-3	CS-4	109.50	109.45	1	5.00	0.90	50.00	0.10	10.17	16.57	1.47	112.92	112.83	110.50
Link659	Trapezoidal	CS-4	CS-5	109.45	108.75	1	5.00	1.00	700.00	0.10	12.95	18.51	1.62	112.83	111.53	110.50
Link661	Rectangular	CN-9	6863.30	98.93	98.45	1	5.00	5.00	307.00	0.16	133.65	16.02	5.33	109.72	109.44	107.53
Link662	Circular	CA-1	CT-98	103.12	101.20	1	0.00	1.50	48.00	4.00	20.08	16.03	11.14	110.13	109.46	109.20
Link663	Circular	CA-2	CT-98	103.12	101.20	1	0.00	1.50	48.00	4.00	-5.02	16.59	2.02	109.46	109.46	108.31
Link664	Circular	CA-3	CT-98	103.12	101.20	1	0.00	1.50	48.00	4.00	-5.94	16.59	2.24	109.46	109.46	108.02
Link665	Natural	7185(ml)	6863.30	98.45	98.45	1	0.00	0.00	251.70	0.00	1043.29	17.13	1.79	109.50	109.44	112.55
L-RD-1	Trapezoidal	RD-1	RD-2	105.44	104.30	1	2.00	4.00	1144.00	0.10	27.21	22.31	0.52	109.57	109.57	109.50
L-RD-2	Trapezoidal	RD-2	RD-3	104.30	103.79	1	2.00	4.00	508.00	0.10	50.83	22.17	0.91	109.57	109.57	109.50
L-RD-3	Circular	RD-3	RD-4	103.79	103.73	1	0.00	2.50	60.00	0.10	48.46	22.22	9.81	109.57	109.56	109.50
L-RD-4	Trapezoidal	RD-4	RD-5	103.73	103.12	1	2.00	4.00	613.00	0.10	54.35	22.37	0.97	109.56	109.55	109.50
L-RD-5	Trapezoidal	RD-5	RD-6	103.12	101.89	1	2.00	4.00	1225.00	0.10	70.67	22.34	1.26	109.55	109.55	109.50
L-RD-6	Trapezoidal	RD-6	RD-7	101.89	100.84	1	2.00	4.00	1054.00	0.10	77.42	22.36	1.38	109.55	109.53	109.50
L-RD-7	Trapezoidal	RD-7	7185.00	100.84	100.33	1	2.00	4.00	510.00	0.10	82.94	22.37	1.48	109.53	109.52	109.50
Outfalls 8																
Link551	Circular	SNT01	CC-40	0.00	0.00	1	0.00	2.00	33.00	0.00	112.07	16.93	0.00	97.91	103.57	105.50
L-CC-1	Circular	CC-1	CC-4	98.03	97.84	1	0.00	2.00	59.00	0.32	15.78	17.58	4.97	104.39	104.28	104.03
L-CC-11	Circular	CC-11	CC-12	112.69	112.14	1	0.00	1.50	25.00	2.20	0.00	0.00	0.00	112.14	112.14	116.57
L-CC-12	Circular	CC-12	CC-13	112.14	110.50	1	0.00	1.50	73.00	2.25	0.00	0.00	0.00	104.04	104.04	116.57
L-CC-13	Circular	CC-13	CJ-3	100.50	98.68	1	0.00	2.00	55.00	3.31	4.15	15.99	5.57	104.04	104.03	116.57

Table 3.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 7-8

Model: E127EXISTING100.XP & HHR_US290_SEGC_SYS_BW8(0)_EXT100 **40064.00**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-CC-14	Circular	CC-14	CJ-29	100.50	97.75	1	0.00	1.50	54.00	5.09	4.58	15.99	6.32	104.11	103.96	116.22
L-CC-15	Circular	CC-15	CC-16	102.78	102.48	1	0.00	1.50	100.00	0.30	1.85	16.96	2.51	105.07	105.05	108.78
L-CC-16	Circular	CC-16	CC-19	102.00	101.77	1	0.00	2.00	70.00	0.33	8.32	16.04	4.57	105.05	104.97	108.48
L-CC-17	Circular	CC-17	CC-16	102.85	102.48	1	0.00	1.50	60.00	0.62	6.25	16.04	4.99	105.20	105.05	108.30
L-CC-18	Circular	CC-18	CC-17	103.43	102.85	1	0.00	1.50	100.00	0.58	1.70	16.03	1.86	105.22	105.20	107.93
L-CC-19	Circular	CC-19	CC-22	101.77	97.94	1	0.00	2.00	170.00	2.25	18.12	16.05	10.06	104.97	104.09	116.62
L-CC-2	Circular	CC-2	CC-1	102.31	99.53	1	0.00	1.50	100.00	2.78	10.29	16.26	9.95	105.08	104.39	106.81
L-CC-20	Circular	CC-20	CC-19	110.24	110.02	1	0.00	1.50	73.00	0.30	5.15	16.02	4.33	111.27	110.89	116.69
L-CC-21	Circular	CC-21	CC-20	110.52	110.24	1	0.00	1.50	95.00	0.29	3.15	16.01	2.68	111.40	111.27	117.51
L-CC-22	Circular	CC-22	CJ-4	97.94	97.16	1	0.00	2.00	32.00	2.44	18.12	16.04	9.61	104.09	103.93	116.29
L-CC-23	Circular	CC-23	CJ-5	98.00	97.60	1	0.00	1.50	32.00	1.25	4.17	15.95	4.70	103.95	103.89	116.50
L-CC-24	Circular	CC-24	CJ-6a	98.00	98.00	1	0.00	1.50	30.00	0.00	5.29	15.91	3.59	103.86	103.80	117.29
L-CC-25	Circular	CC-25	CC-26	102.60	102.41	1	0.00	1.50	60.00	0.32	4.37	16.01	3.35	104.12	104.08	107.10
L-CC-26	Circular	CC-26	CC-30	100.49	100.33	1	0.00	2.00	52.00	0.31	16.09	16.01	5.61	104.08	104.00	106.99
L-CC-27	Circular	CC-27	CC-26	102.59	102.41	1	0.00	1.50	60.00	0.30	4.04	16.01	2.69	104.14	104.08	107.09
L-CC-28	Circular	CC-28	CC-31	100.29	97.34	1	0.00	2.50	172.00	1.72	21.24	16.02	8.03	104.07	103.68	120.08
L-CC-29	Circular	CC-29	CC-28	115.60	100.29	1	0.00	1.50	150.00	10.21	8.64	16.08	10.68	115.91	104.07	123.40
L-CC-3	Circular	CC-3	CC-2	103.94	102.31	1	0.00	1.50	100.00	1.63	3.41	16.01	4.63	105.13	105.08	108.44
L-CC-30	Circular	CC-30	CC-28	100.33	100.29	1	0.00	2.00	14.00	0.29	13.91	16.02	6.51	104.00	104.07	105.82
L-CC-31	Circular	CC-31	CJ-8a	97.34	96.83	1	0.00	2.50	30.00	1.70	21.44	16.02	7.57	103.68	103.63	119.84
L-CC-32	Circular	CC-32	CJ-10	97.71	97.17	1	0.00	1.50	30.00	1.80	8.62	15.97	6.66	104.00	103.63	123.21
L-CC-33	Circular	CC-33	CC-34	99.86	97.42	1	0.00	2.00	172.00	1.42	21.29	16.25	8.89	104.98	103.65	126.35
L-CC-34	Circular	CC-34	CJ-12a	97.42	96.50	1	0.00	2.00	30.00	3.07	21.26	16.25	9.90	103.65	103.58	126.10
L-CC-35	Circular	CC-35	CC-36	102.53	102.26	1	0.00	1.50	90.00	0.30	2.23	16.01	2.65	105.28	105.27	107.03
L-CC-36	Circular	CC-36	CC-33	100.82	100.32	1	0.00	2.00	80.00	0.63	13.89	16.25	6.06	105.27	104.98	106.82
L-CC-37	Circular	CC-37	CC-36	102.42	102.26	1	0.00	1.50	55.00	0.29	3.27	16.01	2.78	105.28	105.27	106.92
L-CC-38	Circular	CC-38	CC-33	121.64	120.36	1	0.00	1.50	150.00	0.85	5.07	16.01	5.55	122.41	121.13	128.41
L-CC-39	Circular	CC-39	CJ-14	97.89	96.82	1	0.00	1.50	30.00	3.57	8.06	15.98	8.02	104.22	103.61	128.16
L-CC-4	Circular	CC-4	CC-5	97.84	97.30	1	0.00	2.00	172.00	0.31	16.39	16.94	5.15	104.28	104.18	103.78
L-CC-40	Rectangular	CC-40	CC-43	95.40	95.25	1	6.00	3.00	80.00	0.19	108.03	17.14	5.95	106.09	105.92	106.03
L-CC-42	Circular	CC-42	CC-40	101.87	100.91	1	0.00	1.50	40.00	2.40	12.69	16.94	9.41	104.69	106.09	105.97
L-CC-43	Rectangular	CC-43	CC-44	95.25	94.98	1	6.00	4.00	149.00	0.18	109.58	17.14	4.54	105.92	104.11	106.47
L-CC-44	Rectangular	CC-44	CJ-17	94.98	94.88	1	6.00	4.00	48.00	0.21	110.84	17.13	4.60	104.11	103.89	106.49
L-CC-45	Circular	CC-45	CC-57	101.04	100.80	1	0.00	1.50	80.00	0.30	8.58	16.94	4.76	105.00	104.58	106.40
L-CC-46	Circular	CC-46	CC-45	101.15	101.04	1	0.00	1.50	36.00	0.31	5.44	16.94	3.05	105.24	105.00	106.65
L-CC-47	Circular	CC-47	CC-43	100.25	100.08	1	0.00	1.50	53.00	0.32	16.21	16.94	9.10	106.10	105.92	106.10
L-CC-48	Circular	CC-48	CC-47	100.54	100.25	1	0.00	1.50	96.00	0.30	16.46	16.95	9.20	106.22	106.10	106.10
L-CC-49	Circular	CC-49	CC-48	100.52	100.54	1	0.00	1.50	55.00	-0.04	17.51	16.95	9.78	106.30	106.22	106.20
L-CC-5	Circular	CC-5	CJ-1	97.30	96.60	1	0.00	2.50	62.00	1.13	17.57	16.93	3.55	104.18	104.17	123.44
L-CC-50	Circular	CC-50	CJ-18	100.96	96.48	1	0.00	1.50	48.00	9.33	6.03	16.94	3.30	104.81	103.88	106.10
L-CC-51	Circular	CC-51	CJ-19	100.55	96.31	1	0.00	1.50	48.00	8.83	6.15	16.94	11.63	103.82	103.72	106.46
L-CC-52	Circular	CC-52	CC-51	100.69	100.55	1	0.00	1.50	45.00	0.31	6.01	16.94	7.03	104.91	103.82	106.19
L-CC-53	Circular	CC-53	CC-54	122.20	121.65	1	0.00	1.50	186.00	0.30	4.26	16.03	3.85	123.19	122.44	127.92
L-CC-54	Circular	CC-54	CJ-22	98.50	96.17	1	0.00	1.50	35.00	6.66	6.12	15.98	9.82	104.23	103.54	127.94
L-CC-55	Circular	CC-55	CJ-24	98.50	95.96	1	0.00	1.50	35.00	7.26	7.20	16.00	11.52	103.76	103.02	124.89
L-CC-56	Circular	CC-10	CJ-2	100.00	99.65	1	0.00	1.50	35.00	1.00	4.65	15.99	5.37	104.15	104.11	117.72
L-CC-57	Circular	CC-57	CC-40	100.80	101.27	1	0.00	1.50	43.00	-1.09	14.06	16.94	8.07	104.58	106.09	105.90
L-CC-6	Circular	CC-6	CJ-27	99.50	98.51	1	0.00	2.00	60.00	1.65	12.06	15.99	7.81	104.24	104.17	121.44
L-CC-7	Circular	CC-7	CC-6	118.03	116.45	1	0.00	1.50	69.00	2.29	8.65	16.01	9.18	118.82	117.24	121.50
L-CC-8	Circular	CC-8	CC-7	118.60	118.03	1	0.00	1.50	25.00	2.28	6.65	16.00	7.82	119.28	118.82	121.50
L-CC-9	Circular	CC-9	CJ-28	98.73	96.40	1	0.00	1.50	59.00	3.95	3.22	16.00	1.90	104.29	104.15	119.39
L-CD-1	Circular	CD-1	CJ-4	101.03	97.67	1	0.00	1.50	18.00	18.67	-1.13	15.99	0.50	103.93	103.93	107.03
L-CD-10	Circular	CD-10	CJ-15	100.70	96.76	1	0.00	1.50	18.00	21.89	12.25	15.98	20.77	103.91	103.59	106.70
L-CD-11	Circular	CD-11	CJ-16	100.37	96.66	1	0.00	1.50	18.00	20.61	4.02	16.01	13.70	104.35	103.76	106.37
L-CD-12	Circular	CD-12	CJ-17	99.26	93.96	1	0.00	3.00	178.00	2.98	-11.90	15.98	1.07	104.40	103.89	105.84
L-CD-13	Circular	CD-13	CD-12	100.40	100.26	1	0.00	2.00	73.00	0.19	-7.12	16.93	2.22	104.44	104.40	105.84
L-CD-14	Circular	CD-14	CJ-21	99.30	96.20	1	0.00	1.50	18.00	17.22	11.48	16.25	16.77	103.75	103.59	106.11
L-CD-15	Circular	CD-15	CJ-23	97.50	96.07	1	0.00	1.50	18.00	7.94	3.81	16.25	10.75	103.35	103.29	105.12
L-CD-16	Circular	CD-16	CJ-25	97.50	95.90	1	0.00	2.50	18.00	8.89	6.64	16.94	10.52	102.91	102.92	104.21
L-CD-17	Circular	CD-17	CJ-30	97.32	95.65	1	0.00	1.50	18.00	9.28	-10.46	16.94	13.65	102.91	102.91	103.32
L-CD-18	Circular	CD-18	CJ-32	97.54	95.55	1	0.00	1.50	18.00	11.06	-8.48	16.94	3.74	102.91	102.91	103.54

Table 3.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 7-8

Model: E127EXISTING100.XP & HHR_US290_SEGC_SYS_BW8(0)_EXT100 **40064.00**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-CD-19	Circular	CD-19	CJ-35	97.41	95.34	1	0.00	1.50	18.00	11.50	9.03	16.25	12.70	102.91	102.91	103.41
L-CD-2	Circular	CD-2	CJ-5	100.82	97.60	1	0.00	1.50	18.00	17.89	14.77	16.41	21.05	104.22	103.89	106.80
L-CD-20	Circular	CD-20	CJ-37	97.01	95.22	1	0.00	1.50	18.00	9.94	8.09	18.07	13.03	102.91	102.90	103.01
L-CD-21	Circular	CD-21	CJ-37a	96.61	95.12	1	0.00	1.50	18.00	8.28	8.92	25.22	12.30	102.90	102.90	102.61
L-CD-22	Circular	CD-22	CJ-37b	96.91	95.00	1	0.00	1.50	18.00	10.61	14.31	16.01	16.96	102.90	102.90	102.91
L-CD-23	Circular	CD-23	CJ-39	96.81	94.79	1	0.00	2.50	18.00	11.22	16.37	16.01	16.98	102.90	102.90	102.81
L-CD-24	Circular	CD-24	CJ-41	96.41	94.73	1	0.00	1.50	18.00	9.33	14.55	16.17	16.48	102.90	102.90	102.41
L-CD-27	Circular	CD-27	CJ-45	96.41	94.40	1	0.00	1.50	18.00	11.17	31.16	16.07	18.52	102.90	102.90	102.41
L-CD-28	Circular	CD-28	CJ-46	96.71	94.29	1	0.00	1.50	18.00	13.44	21.21	16.26	16.34	102.90	102.90	102.71
L-CD-29	Circular	CD-29	CJ-49	96.24	93.43	1	0.00	1.50	18.00	15.61	20.04	16.25	21.53	102.90	102.90	102.24
L-CD-3	Circular	CD-3	CJ-6	100.71	97.53	1	0.00	1.50	18.00	17.67	-1.20	15.99	1.30	103.83	103.82	106.71
L-CD-30	Circular	CD-30	CJ-51	95.60	93.84	1	0.00	2.50	18.00	9.78	25.66	25.44	8.97	102.90	102.90	101.60
L-CD-31	Circular	CD-31	CJ-52	95.60	93.74	1	0.00	1.50	18.00	10.33	20.10	25.57	13.33	102.90	102.90	101.81
L-CD-32	Circular	CD-32	CJ-54	95.90	93.54	1	0.00	1.50	20.00	11.80	15.02	25.45	8.33	102.90	102.90	101.90
L-CD-4	Circular	CD-4	CJ-7	100.83	97.45	1	0.00	1.50	18.00	18.78	2.23	15.98	9.69	103.75	103.75	106.83
L-CD-5	Circular	CD-5	CJ-8	101.06	97.37	1	0.00	1.50	18.00	20.50	-0.68	15.99	0.34	103.67	103.67	107.06
L-CD-6	Circular	CD-6	CJ-9	101.07	97.20	1	0.00	1.50	18.00	21.50	11.06	16.25	20.28	103.75	103.61	107.07
L-CD-7	Circular	CD-7	CJ-11	100.86	97.13	1	0.00	1.50	18.00	20.72	1.13	15.99	1.35	103.64	103.61	106.86
L-CD-8	Circular	CD-8	CJ-12	100.76	97.00	1	0.00	1.50	18.00	20.89	-0.88	15.99	0.80	103.61	103.59	106.76
L-CD-9	Circular	CD-9	CJ-13	100.85	96.98	1	0.00	2.50	18.00	21.50	2.04	17.98	0.54	103.61	103.57	106.85
L-CE-1	Circular	CE-1	CE-2	99.90	99.57	1	0.00	1.50	115.00	0.29	-4.33	16.01	2.38	104.12	103.62	105.57
L-CE-10	Circular	CE-10	CJ-33	97.77	95.39	1	0.00	1.50	50.00	4.76	4.74	15.99	7.68	102.91	102.91	116.98
L-CE-11	Circular	CE-11	CE-4	97.31	96.95	1	0.00	1.50	45.00	0.80	5.20	15.99	2.93	102.91	102.91	123.68
L-CE-2	Circular	CE-2	CE-3	99.57	97.77	1	0.00	1.50	155.00	1.16	4.58	16.01	2.57	103.62	102.91	105.07
L-CE-3	Circular	CE-3	CE-4	97.77	96.95	1	0.00	2.00	144.00	0.57	10.96	16.01	5.12	102.91	102.91	104.27
L-CE-4	Circular	CE-4	CE-5	96.45	96.23	1	0.00	2.50	111.00	0.20	14.66	16.02	3.96	102.91	102.91	103.45
L-CE-5	Circular	CE-5	CE-6	95.73	95.58	1	0.00	3.00	75.00	0.20	31.26	16.02	5.32	102.91	102.91	103.93
L-CE-6	Circular	CE-6	CE-7	95.08	95.01	1	0.00	3.50	35.00	0.20	36.44	16.02	3.96	102.91	102.91	102.50
L-CE-7	Circular	CE-7	CE-8	95.01	94.88	1	0.00	3.50	171.00	0.08	40.77	16.02	4.89	102.91	102.91	120.31
L-CE-8	Circular	CE-8	CJ-31	93.88	93.56	1	0.00	3.50	40.00	0.80	41.03	16.02	5.24	102.91	102.91	119.65
L-CE-9	Circular	CE-9	CE-3	98.65	98.27	1	0.00	1.50	45.00	0.84	8.18	16.00	5.37	103.45	102.91	124.60
L-CF-1	Circular	CF-1	CF-2	109.51	109.06	1	0.00	1.50	150.00	0.30	2.61	16.02	2.27	110.31	110.17	117.75
L-CF-2	Circular	CF-2	CF-3	109.06	108.63	1	0.00	1.50	145.00	0.30	5.22	16.03	4.17	110.17	109.51	117.42
L-CF-3	Circular	CF-3	CJ-37	96.00	95.29	1	0.00	1.50	100.00	0.71	5.81	16.01	4.59	102.91	102.90	115.42
L-CG-1	Circular	CG-1	CG-2	99.24	98.12	1	0.00	1.50	129.00	0.87	4.92	25.56	4.26	102.91	102.91	103.93
L-CG-10	Circular	CG-10	CJ-37b	93.91	93.57	1	0.00	3.00	65.00	0.52	40.29	15.98	6.29	102.90	102.90	101.50
L-CG-11	Circular	CG-11	CG-6	97.70	97.32	1	0.00	1.50	85.00	0.45	3.87	16.00	3.03	102.91	102.91	116.84
L-CG-2	Circular	CG-2	CG-3	97.62	97.39	1	0.00	2.00	117.00	0.20	18.92	25.53	5.99	102.91	102.91	102.62
L-CG-3	Circular	CG-3	CG-8	95.59	95.13	1	0.00	2.50	115.00	0.40	27.30	15.98	5.53	102.91	102.90	103.23
L-CG-4	Circular	CG-4	CG-3	95.91	95.59	1	0.00	2.50	159.00	0.20	16.80	15.98	3.41	102.91	102.91	103.11
L-CG-5	Circular	CG-5	CG-4	96.59	96.41	1	0.00	2.00	88.00	0.20	9.89	25.47	3.11	102.91	102.91	102.90
L-CG-6	Circular	CG-6	CG-5	97.32	97.09	1	0.00	1.50	114.00	0.20	4.83	16.00	3.46	102.91	102.91	103.32
L-CG-7	Circular	CG-7	CG-4	97.28	95.91	1	0.00	1.50	90.00	1.52	10.55	16.25	5.86	102.98	102.91	114.44
L-CG-8	Circular	CG-8	CG-9	95.13	94.53	1	0.00	2.50	150.00	0.40	31.64	15.98	6.42	102.90	102.90	114.59
L-CG-9	Circular	CG-9	CG-10	94.00	93.91	1	0.00	3.00	30.00	0.30	37.25	15.98	5.50	102.90	102.90	114.59
L-CH-1	Circular	CH-1	CJ-38	96.50	94.90	1	0.00	1.50	95.00	1.68	7.56	16.00	6.71	102.90	102.90	102.91
L-CH-2	Circular	CH-2	CH-3	96.50	95.46	1	0.00	1.50	55.00	1.89	-1.91	15.99	0.64	102.90	102.90	116.87
L-CH-3	Circular	CH-3	CJ-40	95.46	94.73	1	0.00	1.50	35.00	2.09	-3.33	15.99	0.80	102.90	102.90	107.65
L-CJ-1	Circular	CJ-1	CJ-27	96.60	96.51	1	0.00	4.00	82.00	0.11	18.57	16.93	1.66	104.17	104.17	106.61
L-CJ-10	Rectangular	CJ-10	CJ-11	94.50	94.46	1	5.00	5.00	30.00	0.13	125.22	16.06	5.53	103.63	103.61	106.86
L-CJ-11	Rectangular	CJ-11	CJ-12	94.46	94.39	1	5.00	5.00	70.00	0.10	128.23	15.96	5.53	103.61	103.59	106.86
L-CJ-12	Rectangular	CJ-12	CJ-12a	94.39	94.32	1	5.00	5.00	50.00	0.14	129.11	15.96	5.51	103.59	103.58	106.76
L-CJ-12a	Rectangular	CJ-12a	CJ-13	94.32	94.31	1	5.00	5.00	25.00	0.04	146.18	16.03	6.36	103.58	103.57	106.85
L-CJ-13	Rectangular	CJ-13	CJ-14	94.31	94.15	1	5.00	5.00	125.00	0.13	146.05	16.03	6.32	103.57	103.61	106.85
L-CJ-14	Rectangular	CJ-14	CJ-15	94.15	94.09	1	5.00	5.00	75.00	0.08	151.20	16.03	6.63	103.61	103.59	106.70
L-CJ-15	Rectangular	CJ-15	CJ-16	94.09	93.99	1	5.00	5.00	96.00	0.10	162.10	16.02	7.28	103.59	103.76	106.70
L-CJ-16	Rectangular	CJ-16	CJ-17	93.99	93.88	1	5.00	5.00	99.00	0.11	166.24	16.02	8.16	103.76	103.89	106.37
L-CJ-17	Rectangular	CJ-17	CJ-18	92.88	92.82	1	8.00	6.00	51.00	0.12	198.21	16.04	4.41	103.89	103.88	105.84
L-CJ-18	Rectangular	CJ-18	CJ-19	92.82	92.70	1	8.00	6.00	100.00	0.12	198.53	16.04	4.33	103.88	103.72	106.11
L-CJ-19	Rectangular	CJ-19	CJ-20	92.70	92.65	1	8.00	6.00	50.00	0.10	205.18	16.04	4.40	103.72	103.66	106.11
L-CJ-2	Circular	CJ-2	CJ-2A	96.32	96.30	1	0.00	4.00	20.00	0.10	54.99	15.97	5.08	104.11	104.09	106.65

Table 3.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 7-8

Model: E127EXISTING100.XP & HHR_US290_SEGC_SYS_BW8(0)_EXT100 **40064.00**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-CJ-20	Rectangular	CJ-20	CJ-21	92.65	92.59	1	8.00	6.00	63.00	0.10	205.21	16.03	4.35	103.66	103.59	106.11
L-CJ-21	Rectangular	CJ-21	CJ-22	92.59	92.51	1	8.00	6.00	50.00	0.16	214.68	16.04	4.48	103.59	103.54	106.11
L-CJ-22	Rectangular	CJ-22	CJ-23	92.51	92.40	1	8.00	6.00	95.00	0.12	218.99	16.03	4.55	103.54	103.29	105.12
L-CJ-23	Rectangular	CJ-23	CJ-24	92.40	92.29	1	8.00	6.00	103.00	0.11	222.66	16.03	4.63	103.29	103.02	105.12
L-CJ-24	Rectangular	CJ-24	CJ-25	92.29	92.23	1	8.00	6.00	45.00	0.13	228.89	16.03	4.76	103.02	102.92	104.21
L-CJ-25	Rectangular	CJ-25	CJ-26	92.23	92.12	1	8.00	6.00	100.00	0.11	233.06	16.03	4.84	102.92	102.91	104.21
L-CJ-26	Rectangular	CJ-26	CJ-30	92.32	92.04	1	8.00	6.00	71.00	0.39	238.67	16.03	4.96	102.91	102.91	103.32
L-CJ-27	Circular	CJ-27	CJ-28	96.51	96.40	1	0.00	4.00	100.00	0.11	26.89	15.97	2.41	104.17	104.15	107.05
L-CJ-28	Circular	CJ-28	CJ-2	96.40	96.32	1	0.00	4.00	72.00	0.11	51.00	15.98	4.68	104.15	104.11	106.80
L-CJ-29	Rectangular	CJ-29	CJ-4	95.09	95.00	1	5.00	4.00	82.00	0.11	58.75	15.97	2.93	103.96	103.93	106.63
L-CJ-2a	Circular	CJ-2A	CJ-3	96.30	96.18	1	0.00	4.00	74.00	0.16	55.33	15.97	5.19	104.09	104.03	195.50
L-CJ-3	Circular	CJ-3	CJ-29	96.18	96.09	1	0.00	4.00	80.00	0.11	57.57	15.97	5.79	104.03	103.96	107.53
L-CJ-30	Rectangular	CJ-30	CJ-31	92.04	91.95	1	8.00	6.00	79.00	0.11	246.37	16.03	5.12	102.91	102.91	103.32
L-CJ-31	Rectangular	CJ-31	CJ-32	91.95	91.94	1	9.00	6.00	12.00	0.08	282.30	16.03	5.22	102.91	102.91	103.54
L-CJ-32	Rectangular	CJ-32	CJ-33	91.94	91.78	1	9.00	6.00	133.00	0.12	282.27	16.03	5.22	102.91	102.91	103.54
L-CJ-33	Rectangular	CJ-33	CJ-35	91.78	91.73	1	9.00	6.00	53.00	0.09	286.05	16.03	5.28	102.91	102.91	103.41
L-CJ-35	Rectangular	CJ-35	CJ-37	91.73	91.62	1	9.00	6.00	98.00	0.11	293.75	16.03	5.43	102.91	102.90	103.41
L-CJ-37	Rectangular	CJ-37	CJ-37a	91.62	91.51	1	9.00	6.00	95.00	0.12	305.86	16.03	5.65	102.90	102.90	103.01
L-CJ-37a	Rectangular	CJ-37a	CJ-37b	91.51	91.46	1	9.00	6.00	46.00	0.11	312.74	16.03	5.78	102.90	102.90	102.61
L-CJ-37b	Rectangular	CJ-37b	CJ-37c	91.46	91.40	1	9.00	6.00	55.00	0.11	362.41	16.03	6.70	102.90	102.90	195.50
L-CJ-37c	Rectangular	CJ-37c	CJ-38	91.40	91.29	1	9.00	6.00	96.00	0.11	362.49	16.03	6.70	102.90	102.90	102.91
L-CJ-38	Rectangular	CJ-38	CJ-39	91.29	91.18	1	9.00	6.00	100.00	0.11	370.03	16.03	6.84	102.90	102.90	102.91
L-CJ-39	Rectangular	CJ-39	CJ-40	91.18	91.12	1	9.00	6.00	50.00	0.12	386.31	16.03	7.14	102.90	102.90	102.81
L-CJ-4	Rectangular	CJ-4	CJ-5	95.00	94.93	1	5.00	4.00	73.00	0.10	76.12	15.97	3.80	103.93	103.89	107.03
L-CJ-40	Rectangular	CJ-40	CJ-41	91.12	91.06	1	9.00	6.00	50.00	0.12	385.94	16.03	7.13	102.90	102.90	102.41
L-CJ-41	Rectangular	CJ-41	CJ-43	91.06	90.90	1	10.00	6.00	145.00	0.11	399.96	16.03	6.65	102.90	102.90	102.41
L-CJ-43	Rectangular	CJ-43	CJ-45	90.90	90.73	1	10.00	6.00	148.00	0.11	439.64	16.03	7.31	102.90	102.90	102.71
L-CJ-45	Rectangular	CJ-45	CJ-46	90.73	90.62	1	10.00	6.00	98.00	0.11	475.42	16.03	7.91	102.90	102.90	102.71
L-CJ-46	Rectangular	CJ-46	CJ-47	90.62	90.57	1	10.00	6.00	48.00	0.10	492.38	16.03	8.19	102.90	102.90	102.71
L-CJ-47	Rectangular	CJ-47	CJ-48	90.57	90.40	1	10.00	6.00	148.00	0.11	495.91	16.03	8.25	102.90	102.90	101.10
L-CJ-48	Rectangular	CJ-48	CJ-49	90.40	90.36	2	6.00	6.00	39.00	0.10	515.16	16.03	7.14	102.90	102.90	101.10
L-CJ-49	Rectangular	CJ-49	CJ-50	90.36	90.24	2	6.00	6.00	108.00	0.11	534.19	16.03	7.41	102.90	102.90	102.24
L-CJ-5	Rectangular	CJ-5	CJ-6	94.93	94.86	1	5.00	4.00	68.00	0.10	92.06	15.97	4.60	103.89	103.82	106.80
L-CJ-50	Rectangular	CJ-50	CJ-51	90.24	90.17	2	6.00	6.00	60.00	0.12	543.70	16.03	7.54	102.90	102.90	102.24
L-CJ-51	Rectangular	CJ-51	CJ-52	90.17	90.07	2	6.00	6.00	86.00	0.12	547.68	16.03	7.60	102.90	102.90	101.81
L-CJ-52	Rectangular	CJ-52	CJ-53	90.07	90.00	2	6.00	6.00	68.00	0.10	557.68	16.03	7.73	102.90	102.90	101.81
L-CJ-53	Rectangular	CJ-53	CJ-53a	90.00	89.95	2	6.00	6.00	45.00	0.11	557.67	16.04	7.73	102.90	102.90	101.81
L-CJ-53a	Rectangular	CJ-53a	CJ-54	89.95	89.87	2	6.00	6.00	73.00	0.11	557.69	16.04	7.74	102.90	102.90	101.90
L-CJ-54	Rectangular	CJ-54	CJ-55	89.87	89.74	2	6.00	6.00	120.00	0.11	557.10	16.04	7.73	102.90	102.90	101.90
L-CJ-55	Rectangular	CJ-55	CJ-56	89.74	89.57	2	6.00	6.00	150.00	0.11	557.06	16.04	7.73	102.90	102.90	102.20
L-CJ-56	Rectangular	CJ-56	CJ-57	89.57	89.41	2	6.00	6.00	150.00	0.11	605.28	16.04	8.40	102.90	102.90	102.20
L-CJ-57	Rectangular	CJ-57	CJ-58	89.41	89.22	2	6.00	6.00	173.00	0.11	605.27	16.04	8.40	102.90	102.90	102.20
L-CJ-58	Rectangular	CJ-58	CJ-59	87.24	87.18	2	8.00	8.00	60.00	0.10	766.73	16.04	5.99	102.90	102.90	195.50
L-CJ-6	Rectangular	CJ-6	CJ-6a	94.86	94.83	1	5.00	4.00	25.00	0.12	91.94	15.97	4.59	103.82	103.80	106.71
L-CJ-6a	Rectangular	CJ-6a	CJ-7	94.83	94.78	1	5.00	4.00	50.00	0.10	95.52	15.97	4.77	103.80	103.75	195.50
L-CJ-7	Rectangular	CJ-7	CJ-8	94.78	94.70	1	5.00	4.00	73.00	0.11	97.23	15.97	4.86	103.75	103.67	106.83
L-CJ-8	Rectangular	CJ-8	CJ-8a	94.70	94.66	1	5.00	4.00	30.00	0.13	97.14	15.97	4.85	103.67	103.63	107.06
L-CJ-8a	Rectangular	CJ-8a	CJ-9	94.66	94.54	1	5.00	5.00	109.00	0.11	110.89	15.97	4.85	103.63	103.61	195.50
L-CJ-9	Rectangular	CJ-9	CJ-10	94.54	94.50	1	5.00	5.00	40.00	0.10	123.00	15.97	5.32	103.61	103.63	107.07
L-CK-1	Circular	CK-1	CK-2	97.91	97.70	1	0.00	2.00	106.00	0.20	16.09	25.45	5.09	105.30	105.30	102.91
L-CK-2	Circular	CK-2	CK-3	96.81	96.65	1	0.00	2.00	80.00	0.20	42.01	15.51	13.24	105.30	103.97	103.31
L-CK-2a	Circular	BW8-SW	CK-2	97.11	96.81	1	0.00	2.00	60.00	0.50	46.68	15.99	14.62	106.55	105.30	103.31
L-CK-3	Circular	CK-3	CK-4	96.15	96.10	1	0.00	2.50	25.00	0.20	44.20	15.52	8.93	103.97	103.86	102.00
L-CK-4	Circular	CK-4	CK-5	96.10	94.06	1	0.00	2.50	218.00	0.94	51.33	15.79	10.51	103.86	103.00	118.51
L-CK-5	Circular	CK-5	CJ-43	94.06	93.57	1	0.00	2.50	42.00	1.17	51.28	15.79	10.70	103.00	102.90	115.63
L-CK-6	Circular	CK-6	CK-7	115.67	114.11	1	0.00	1.50	150.00	1.04	4.05	16.26	4.48	116.31	115.03	121.66
L-CK-7	Circular	CK-7	CK-4	114.11	112.50	1	0.00	1.50	150.00	1.07	7.52	16.26	6.64	115.03	113.42	120.01
L-CK-8	Circular	CK-8	CJ-45	96.75	94.44	1	0.00	1.50	55.00	4.20	6.64	15.99	8.60	102.91	102.90	119.58
L-CK-9	Circular	CK-9	CJ-47	96.75	94.34	1	0.00	1.50	65.00	3.71	6.14	15.99	7.15	102.90	102.90	121.41
L-CL-1	Circular	CL-1	CL-2	97.02	96.76	1	0.00	1.50	85.00	0.31	14.61	26.36	8.26	102.90	102.90	103.43
L-CL-2	Circular	CL-2	CL-3	96.26	96.19	1	0.00	2.00	47.00	0.15	22.77	26.33	7.19	102.90	102.90	102.26

Table 3.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 7-8

Model: E127EXISTING100.XP & HHR_US290_SEGC_SYS_BW8(0)_EXT100 **40064.00**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-CL-3	Circular	CL-3	CL-8	96.19	95.95	1	0.00	2.00	115.00	0.21	22.85	26.24	7.21	102.90	102.90	102.19
L-CL-4	Circular	CL-4	CL-4a	95.23	94.67	1	0.00	2.00	90.00	0.62	22.87	26.25	7.24	102.90	102.90	123.17
L-CL-4a	Circular	CL-4a	CL-5	94.67	94.11	1	0.00	2.00	90.00	0.62	22.88	26.24	7.25	102.90	102.90	124.50
L-CL-5	Circular	CL-5	CL-6	94.11	93.93	1	0.00	2.50	30.00	0.60	22.90	26.24	5.87	102.90	102.90	123.17
L-CL-6	Circular	CL-6	CJ-48	93.43	90.40	1	0.00	2.50	48.00	6.31	23.14	25.41	4.64	102.90	102.90	101.10
L-CL-7	Circular	CL-7	CJ-50	94.43	93.91	1	0.00	1.50	80.00	0.65	10.54	16.00	5.90	102.90	102.90	124.67
L-CL-8	Circular	CL-8	CL-4	95.95	95.23	1	0.00	2.00	97.00	0.74	22.86	26.24	7.23	102.90	102.90	102.57
L-CL-9	Circular	CL-9	CL-1	97.24	97.02	1	0.00	1.50	108.00	0.20	14.60	26.36	8.18	102.90	102.90	102.57
L-CP-1	Circular	CP-1	CJ-53	97.23	93.67	1	0.00	1.50	40.00	8.90	-1.49	25.57	1.28	102.90	102.90	103.23
L-CP-2	Circular	CP-2	CJ-54	96.41	93.54	1	0.00	1.50	60.00	4.78	8.55	25.01	4.73	102.90	102.90	102.41
L-CP-3	Circular	CP-3	CP-2	96.89	96.41	1	0.00	1.50	160.00	0.30	7.15	24.99	3.97	103.04	102.90	102.89
L-CR-10	Circular	CR-10	CR-10a	89.50	89.15	1	0.00	8.50	32.00	1.09	280.02	25.79	4.92	102.90	102.90	122.03
L-CR-10a	Circular	CR-10a	CR-12	89.15	88.36	1	0.00	8.50	87.00	0.91	304.79	25.79	5.36	102.90	102.89	122.50
L-CR-11	Circular	CR-11	CR-12	96.76	94.86	1	0.00	1.50	180.00	1.06	9.89	16.01	6.92	102.90	102.89	102.76
L-CR-12	Rectangular	CR-12	CR-97	88.36	87.76	1	6.00	6.00	220.00	0.27	338.17	25.76	9.35	102.89	102.90	102.76
L-CR-13	Circular	CR-13	CR-14	96.76	96.65	1	0.00	1.50	130.00	0.08	15.44	26.01	8.65	102.85	102.85	102.26
L-CR-14	Circular	CR-14	CR-16	94.65	94.32	1	0.00	2.00	111.00	0.30	22.14	26.00	6.95	102.85	102.85	102.65
L-CR-15	Circular	CR-15	CR-14	96.57	96.41	1	0.00	1.50	80.00	0.20	9.05	25.92	5.03	102.85	102.85	102.57
L-CR-16	Circular	CR-16	CR-17	94.32	94.09	1	0.00	2.00	109.00	0.21	22.12	25.99	6.95	102.85	102.85	102.98
L-CR-17	Circular	CR-17	CR-23	91.16	90.99	1	0.00	3.50	80.00	0.21	79.50	15.96	8.22	102.85	102.86	103.30
L-CR-18	Circular	CR-18	CR-17	91.80	91.66	1	0.00	3.00	100.00	0.14	68.02	15.95	9.56	102.83	102.85	103.25
L-CR-18.1	Circular	BW8-SE	CR-18	92.10	91.80	1	0.00	2.50	60.00	0.50	54.10	16.26	10.86	102.83	102.83	103.25
L-CR-19	Circular	CR-19	CR-18	92.32	91.86	1	0.00	3.00	225.00	0.20	65.43	27.31	9.20	102.80	102.83	102.13
L-CR-20	Circular	CR-20	CR-19	92.56	92.32	1	0.00	3.00	125.00	0.19	65.43	27.31	9.18	102.80	102.80	100.73
L-CR-21	Circular	CR-21	CR-20	93.56	92.56	1	0.00	2.00	60.00	1.67	31.12	26.96	9.72	102.79	102.80	99.10
L-CR-22	Circular	CR-22	CR-21	94.55	93.56	1	0.00	2.00	18.00	5.50	-7.31	27.59	1.80	102.79	102.79	118.57
L-CR-23	Circular	CR-23	CR-6	90.99	90.75	1	0.00	3.50	125.00	0.19	87.17	16.00	9.02	102.86	102.87	102.50
L-CR-24	Circular	CR-24	CR-23	96.48	95.00	1	0.00	1.50	80.00	1.85	3.11	25.20	1.73	102.86	102.86	102.48
L-CR-25	Circular	CR-25	CR-23	94.68	94.60	1	0.00	2.00	32.00	0.25	7.86	16.00	4.37	102.86	102.86	125.68
L-CR-27	Circular	CR-27	CR-29	96.06	95.79	1	0.00	1.50	87.00	0.31	18.40	28.21	10.36	102.64	102.64	100.56
L-CR-28	Circular	CR-28	CR-29	94.29	94.02	1	0.00	2.00	85.00	0.32	23.00	27.31	7.21	102.63	102.64	99.10
L-CR-29	Circular	CR-29	CR-30	94.02	93.51	1	0.00	2.00	173.00	0.29	37.53	27.34	11.84	102.64	102.79	100.29
L-CR-3	Circular	CR-3	CR-8	89.96	89.70	1	0.00	7.50	365.00	0.07	35.49	25.78	1.16	102.89	102.89	100.50
L-CR-30	Circular	CR-30	CR-31	93.01	92.50	1	0.00	2.50	170.00	0.30	49.86	25.99	10.04	102.79	102.87	101.06
L-CR-31	Circular	CR-31	CR-45	92.50	92.39	1	0.00	2.50	32.00	0.34	49.78	25.99	10.06	102.87	102.88	101.91
L-CR-32	Circular	CR-32	CR-28	96.04	95.83	1	0.00	1.50	70.00	0.30	7.66	16.25	5.40	102.63	102.63	111.71
L-CR-33	Circular	CR-33	CR-34a	94.20	93.75	1	0.00	2.00	150.00	0.30	33.53	27.01	10.53	102.74	102.75	99.50
L-CR-33a	Circular	CR-33a	CR-33	94.30	94.20	1	0.00	1.50	32.00	0.31	12.66	27.36	7.14	102.75	102.74	126.50
L-CR-34	Circular	CR-34	CR-34a	94.30	94.20	1	0.00	1.50	32.00	0.31	8.56	16.00	5.50	102.75	102.75	121.50
L-CR-34a	Circular	CR-34a	CR-10a	93.75	93.22	1	0.00	2.00	160.00	0.33	39.98	26.57	12.59	102.75	102.90	99.50
L-CR-35	Circular	CR-35	CR-36	95.95	95.65	1	0.00	1.50	100.00	0.30	19.50	27.94	10.96	102.80	102.80	100.48
L-CR-36	Circular	CR-36	CR-38	95.15	94.90	1	0.00	2.00	125.00	0.20	37.93	27.67	12.01	102.80	102.80	100.15
L-CR-37	Circular	CR-37	CR-38	93.97	93.81	1	0.00	2.00	78.00	0.21	10.50	27.66	3.27	102.80	102.80	113.24
L-CR-38	Circular	CR-38	CR-20	93.31	93.06	1	0.00	2.50	125.00	0.20	61.38	27.59	12.42	102.80	102.80	100.10
L-CR-39	Circular	CR-39	CR-9	116.89	116.68	1	0.00	2.00	71.00	0.30	6.43	16.02	4.36	117.89	117.58	124.20
L-CR-4	Circular	CR-4	CR-3	90.01	89.96	1	0.00	7.00	75.00	0.07	10.71	25.87	0.28	102.89	102.89	195.50
L-CR-40	Circular	CR-40	CR-39	117.01	116.89	1	0.00	2.00	41.00	0.29	6.43	16.01	4.06	118.02	117.89	124.20
L-CR-41	Circular	CR-41	CR-10	114.83	114.29	1	0.00	2.00	186.00	0.29	2.20	16.02	3.03	115.43	114.80	121.83
L-CR-45	Circular	CR-45	CR-12	88.54	88.36	1	0.00	4.50	64.00	0.28	50.55	25.58	3.14	102.88	102.89	102.00
L-CR-5	Circular	CR-5	CR-MH5	96.00	95.90	1	0.00	2.00	45.00	0.22	26.37	25.85	8.32	102.89	102.89	101.10
L-CR-6	Circular	CR-6	CR-8	90.75	90.56	1	0.00	3.50	90.00	0.21	87.14	16.00	9.03	102.87	102.89	103.54
L-CR-8	Circular	CR-8	CR-9	89.70	89.60	1	0.00	7.50	105.00	0.10	169.48	25.78	3.82	102.89	102.89	98.50
L-CR-88	Circular	CR-88	CR-40	117.20	117.01	1	0.00	2.00	65.00	0.29	6.43	16.01	4.00	118.23	118.02	124.20
L-CR-8a	Circular	CR-8a	CR-9	90.35	90.29	1	0.00	3.50	32.00	0.19	122.66	25.89	12.61	102.89	102.89	98.50
L-CR-9	Circular	CR-9	CR-10	89.60	89.50	1	0.00	7.50	150.00	0.07	279.94	25.79	6.32	102.89	102.90	124.22
L-CR-97	Rectangular	CR-97	CR-98	87.76	87.28	1	9.00	6.00	340.00	0.14	338.27	25.76	6.23	102.90	102.90	102.20
L-CR-98	Rectangular	CR-98	CJ-58	87.28	87.24	1	9.00	6.00	9.00	0.44	338.27	25.76	6.23	102.90	102.90	195.50
L-CR-MH32	Circular	CR-MH32	CR-33a	94.50	94.30	1	0.00	1.50	70.00	0.29	8.51	27.36	4.81	102.75	102.75	111.50
L-CR-MH5	Circular	CR-MH5	CR-3	94.90	89.96	1	0.00	3.00	150.00	3.29	25.57	25.84	3.58	102.89	102.89	100.50
Link552	Rectangular	CK-3H	CC-40	95.67	95.40	1	6.00	3.00	294.00	0.09	-86.79	16.94	2.44	103.43	106.09	102.00
Link553	Circular	CC-56	CJ-26	97.76	95.79	1	0.00	1.50	38.00	5.18	6.62	16.00	9.70	103.13	102.91	121.27

Table 3.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 7-8

Model: E127EXISTING100.XP & HHR_US290_SEGC_SYS_BW8(0)_EXT100 **40064.00**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Link551	Circular	SNT01	CC-40	0.00	0.00	1	0.00	2.00	33.00	0.00	112.07	16.93	0.00	97.91	103.57	105.50

Table 3.0-A

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 8A and 8B

Model: BW8South_Exist_100-R1.xp

2/27/2012

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 8A and 8B																
L_L-G3	Circular	CI-G3	DI-L25	96.55	96.46	1	0.00	1.50	46.65	0.19	7	16.00	4.73	97.74	97.45	101.92
L_L-L24	Rectangular	DI-L24	DI-L25	94.58	93.31	1	6.00	4.00	749.30	0.17	209	16.78	8.71	100.73	97.31	103.00
L_L-L24	Trapezoidal	DI-L24	DI-L25	102.21	101.80	1	0.00	0.50	749.30	0.00	0	0.00	0.00	97.31	97.31	103.00
L_L-F2	Circular	CI-F2	DI-L24	97.17	97.08	1	0.00	1.50	46.59	0.19	8	16.00	4.29	100.77	100.73	102.69
L_L-L23	Rectangular	MH-L23	DI-L24	95.12	94.58	1	6.00	4.00	326.54	0.16	202	17.00	8.38	102.09	100.73	104.73
L_L-E5	Circular	CI-E5	MH-L23	97.90	97.62	1	0.00	1.50	93.07	0.29	5	16.00	3.27	102.11	102.09	103.80
L_L-L22	Rectangular	MH-L22	MH-L23	95.92	95.12	1	6.00	4.00	105.86	0.14	201	17.00	8.33	102.53	102.09	104.81
L_L-D9	Circular	CI-D9	MH-L22	97.00	96.77	1	0.00	2.50	93.23	0.24	42	15.86	8.46	103.21	102.53	103.53
L_L-L21	Rectangular	L-21	MH-L22	95.41	95.27	1	6.00	4.00	101.78	0.14	169	17.77	7.03	102.81	102.53	104.00
L_L-D8	Circular	CI-D8	CI-D9	97.31	97.00	1	0.00	2.50	51.33	0.18	39	15.86	7.90	103.57	103.21	102.89
L_L-SD4	Natural	SD-4	L-21	96.18	95.41	1	6.00	4.00	67.66	0.28	169	17.77	2.56	102.85	102.81	104.00
L_L-D7	Circular	MH-D7	CI-D8	97.60	97.31	1	0.00	2.50	141.91	0.16	39	15.87	7.90	104.57	103.57	103.58
L_L-C7	Rectangular	CI-C7	SD-4	99.00	98.66	1	4.00	2.00	119.85	0.50	21	16.25	4.58	102.89	102.85	102.60
L_L-SD3	Natural	SD-3	SD-4	98.64	96.18	1	4.00	0.00	826.00	0.08	142	17.01	2.49	103.01	102.85	104.00
L_L-D6	Circular	CI-D6	MH-D7	98.26	97.60	1	0.00	2.50	99.66	0.33	39	16.52	7.93	105.32	104.57	103.21
L_L-C5	Rectangular	CI-C5	SD-3	99.29	99.15	1	4.00	2.00	80.65	0.17	14	16.25	1.75	103.03	103.01	103.00
L_L-SD2	Natural	SD-2	SD-3	99.03	98.64	1	4.00	0.00	191.00	0.32	134	16.61	2.66	103.06	103.01	104.46
L_L-B9	Rectangular	CI-B9	SD-2	99.87	99.39	1	4.00	2.00	91.29	0.13	12	16.25	1.45	103.07	103.06	104.10
L_L-SD1	Natural	SD-1	SD-2	100.24	99.03	1	4.00	0.00	597.00	0.11	127	16.29	2.42	103.35	103.06	105.12
L_L-A12	Rectangular	CI-A12	SD-1	100.53	100.41	1	4.00	2.00	89.19	0.14	28	16.25	3.51	103.38	103.35	105.11
L_L-B12	Rectangular	CI-B12	SD-1	100.51	100.42	1	4.00	2.00	88.58	0.10	110	16.90	13.66	105.52	103.35	104.88
L_L-A10	Rectangular	DI-A10	CI-A12	100.84	100.53	1	4.00	2.00	312.29	0.10	13	16.00	1.65	103.41	103.38	104.00
L_L-OFFB12	Rectangular	Off-B12	CI-B12	100.53	100.51	1	4.00	2.00	24.70	0.08	111	16.58	13.73	106.10	105.52	104.88
L_L-B10	Rectangular	DI-B10	CI-B12	100.70	100.52	1	4.00	2.00	305.74	0.06	20	17.48	2.45	105.53	105.52	104.00
L_L-A7	Rectangular	CI-A7	DI-R13	96.31	96.22	1	3.00	2.00	62.78	0.14	6	16.00	2.39	97.56	97.55	101.23
Link1	Circular	DI-R12	MH-D7	0.05	0.00	1	0.00	0.05	10.00	0.00	0	0.00	0.00	0.00	0.00	102.60
L_L-R12	Rectangular	DI-R12	DI-R13	97.27	96.22	1	5.00	2.00	707.92	0.15	27	16.27	4.04	98.62	97.55	102.60
L_L-R12	Trapezoidal	DI-R12	DI-R13	102.10	101.13	1	0.00	0.50	707.92	0.00	0	0.00	0.00	97.55	97.55	102.60
L_L-R11	Rectangular	CI-R11	DI-R12	97.34	97.27	1	3.00	2.00	59.15	0.12	15	16.25	3.62	98.71	98.62	101.93

Table 4.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 9-16

Model: US290_SegB_EX_A&AA_NS(final).xp & US290_SegB_EX_B-G_NS_1(final).xp **7/12/2011**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 9-10																
L_E117-OUT	**Natural**	**AA-OUT1**	**E117-OUT**	**78.62**	**78.50**	**1.00**	**0.00**	**0.00**	**35.00**	**0.34**	**2154**	**18.05**	**2.58**	**94.18**	**94.18**	**110.48**
L_CI-34	Circular	CI-34	CI-35	91.75	91.42	1.00	0.00	2.50	250.00	0.13	28	20.59	5.54	101.01	100.29	99.22
L_CI-35	Circular	CI-35	MHI-21	91.42	91.30	1.00	0.00	2.50	57.00	0.21	42	15.68	8.52	100.29	100.01	98.40
L_CI-36	Circular	CI-36	CI-37	91.38	91.00	1.00	0.00	2.50	251.00	0.15	25	19.98	5.02	99.27	99.12	99.02
L_CI-37	Circular	CI-37	MHI-22	91.00	90.87	1.00	0.00	2.50	64.00	0.20	38	20.05	7.55	99.12	99.12	98.40
L_CI-38	Circular	CI-38	MHI-24	90.40	90.34	1.00	0.00	2.50	50.00	0.12	93	17.22	18.69	101.24	98.81	97.77
L_CI-39	Circular	CI-39	MHI-23	90.71	90.63	1.00	0.00	2.50	66.00	0.12	44	20.25	8.82	98.82	98.82	97.55
L_CI-40	Circular	CI-40	JCT-40	90.13	90.02	1.00	0.00	1.50	50.00	0.22	15	20.17	8.42	97.46	97.46	97.22
L_CI-41	Circular	CI-41	CI-42	90.06	89.75	1.00	0.00	2.50	281.00	0.11	22	20.61	4.46	97.01	96.83	97.05
L_CI-42	Circular	CI-42	MHI-25	89.25	89.19	1.00	0.00	3.00	53.00	0.11	32	20.62	4.48	96.83	96.81	96.50
L_CI-43	Circular	CI-43	MHI-26	89.57	87.43	1.00	0.00	2.50	83.00	2.58	44	21.16	8.93	96.89	96.71	96.68
L_CI-44	Circular	CI-44	MHI-28	89.59	89.51	1.00	0.00	2.00	56.00	0.14	18	20.44	5.52	96.22	96.19	95.69
L_CI-45	Circular	CI-45	MHI-27	89.87	89.77	1.00	0.00	2.00	76.00	0.13	22	20.70	6.91	96.24	96.22	95.85
L_CI-46	Circular	CI-46	MHI-30	88.84	88.72	1.00	0.00	2.50	54.00	0.22	18	20.61	3.58	95.91	95.90	95.05
L_CI-47	Circular	CI-47	MHI-29	90.08	89.99	1.00	0.00	1.50	91.00	0.10	15	16.75	8.33	98.37	97.06	95.23
L_CI-48	Circular	CI-48	MHI-32	89.46	89.39	1.00	0.00	1.50	65.00	0.11	14	22.39	7.96	95.63	95.62	94.42
L_CI-49	Circular	CI-49	MHI-31	89.84	89.65	1.00	0.00	1.50	86.00	0.22	9	21.68	4.95	95.64	95.63	94.52
L_CI-50	Circular	CI-50	MHI-34	88.17	88.11	1.00	0.00	2.50	54.00	0.11	37	16.51	7.40	95.58	95.40	93.77
L_CI-51	Circular	CI-51	MHI-33	89.48	89.37	1.00	0.00	1.50	51.00	0.22	9	22.37	4.91	95.47	95.43	93.77
L_CI-52	Circular	CI-52	JCT-52	87.52	87.47	1.00	0.00	1.50	46.00	0.11	8	22.21	4.35	95.29	95.29	93.42
L_CI-53	Circular	CI-53	MHI-36	88.66	88.55	1.00	0.00	1.50	56.00	0.20	10	23.55	5.52	94.94	94.93	93.22
L_CI-54	Circular	CI-54	MHI-35	88.97	88.86	1.00	0.00	1.50	51.00	0.22	8	23.46	4.48	94.94	94.93	93.22
L_CI-54A	Circular	CI-54A	CI-54B	87.71	87.66	1.00	0.00	1.50	50.00	0.10	-4	16.58	2.05	94.27	94.27	92.53
L_CI-54B	Circular	CI-54B	CI-54BX	87.16	86.81	1.00	0.00	2.00	250.00	0.14	-8	16.28	2.63	94.27	94.25	92.49
L_E117-6	Natural	CI-54BX	MHI-38X	78.69	78.59	1.00	0.00	0.00	72.00	0.14	1864	17.55	1.37	**94.25**	94.25	115.44
L_CI-54C	Circular	CI-54C	CI-54BX	88.04	87.54	1.00	0.00	1.50	155.00	0.32	-5	16.28	2.45	94.21	94.25	92.85
L_CI-54D	Circular	CI-54D	CI-54C	88.09	88.04	1.00	0.00	1.50	50.00	0.10	-5	16.12	2.32	94.21	94.21	92.36
L_CI-55	Circular	CI-55	CI-56A	87.92	87.66	1.00	0.00	1.50	151.00	0.17	8	24.30	4.38	94.62	94.62	93.14
L_CI-56A	Circular	CI-56A	MHI-37	87.16	87.07	1.00	0.00	2.00	49.00	0.18	16	23.86	5.09	94.62	94.62	92.77
L_CI-56B	Circular	CI-56B	JCT-56B	85.16	85.11	1.00	0.00	1.50	51.00	0.10	-8	16.27	1.28	94.51	94.51	92.40
L_CI-57	Circular	CI-57	CI-58	87.39	87.18	1.00	0.00	1.50	95.00	0.22	5	23.97	2.54	94.21	94.19	92.64
L_CI-58	Circular	CI-58	MH-7A	83.56	83.00	1.00	0.00	4.00	222.00	0.25	-12	16.26	0.54	94.19	94.19	92.40
L_CI-59	Circular	CI-59	MH-8	86.38	86.23	1.00	0.00	1.50	74.00	0.20	-6	16.26	1.98	94.20	94.19	91.89
L_CI-59A	Circular	CI-59A	MH-7A	87.33	87.26	1.00	0.00	1.50	36.00	0.19	-10	16.30	2.72	94.19	94.19	92.20
L_CI-60	Circular	CI-60	CI-61	87.83	87.63	1.00	0.00	1.50	198.00	0.10	5	24.36	2.94	94.18	94.18	92.62
L_CI-61	Circular	CI-61	CI-62	87.13	87.00	1.00	0.00	2.00	129.00	0.10	-11	16.54	3.22	94.18	94.19	92.15
L_CI-62	Circular	CI-62	MH-10	87.00	86.93	1.00	0.00	2.00	29.00	0.24	-14	16.26	3.56	94.19	94.19	91.87
L_CI-62A	Circular	CI-62A	MH-10A	87.33	87.25	1.00	0.00	1.50	40.00	0.20	8	24.53	4.66	94.20	94.20	92.20
L_CI-63	Circular	CI-63	CI-64	87.46	87.15	1.00	0.00	1.50	106.00	0.29	6	24.45	3.54	94.28	94.26	92.50
L_CI-64	Circular	CI-64	MH-9	86.65	86.57	1.00	0.00	2.00	46.00	0.17	8	24.69	2.38	94.26	94.25	92.15
L_CI-65	Circular	CI-65	MHI-39	86.03	85.97	1.00	0.00	2.50	50.00	0.12	41	23.84	8.30	94.29	94.29	93.53
L_CI-66	Circular	CI-66	MH-11	88.00	87.95	1.00	0.00	1.50	29.00	0.17	-4	16.70	1.71	94.27	94.27	93.05
L_DI-10	Circular	DI-10	CI-45	89.92	89.87	1.00	0.00	2.00	50.00	0.10	21	20.70	6.71	96.26	96.24	93.50
L_DI-11	Circular	DI-11	MHI-27	89.37	89.27	1.00	0.00	2.50	90.00	0.11	13	16.02	2.54	96.23	96.22	94.00
L_DI-12	Circular	DI-12	CI-46	88.95	88.84	1.00	0.00	2.50	52.00	0.21	17	20.62	3.34	95.91	95.91	92.30
L_DI-12A	Circular	DI-12A	MHI-38	87.00	86.87	1.00	0.00	2.00	65.00	0.20	-15	16.33	1.82	94.20	94.19	91.50
L_DI-12C	Circular	DI-12C	JCT-12C	81.49	81.25	1.00	0.00	3.00	86.00	0.28	19	24.71	4.87	94.46	94.44	91.53
L_DI-12C2	Circular	DI-12C2	DI-12C	89.42	88.94	1.00	0.00	1.50	240.00	0.20	17	25.79	9.68	97.52	94.46	94.00
L_DI-12D	Circular	DI-12D	MHI-37X	88.56	87.91	1.00	0.00	2.00	54.00	1.20	-10	16.27	1.86	94.24	94.24	92.36
L_DI-12D2	Circular	DI-12D2	DI-12D	90.10	89.54	1.00	0.00	1.50	280.00	0.20	6	15.94	3.31	94.31	94.24	93.50
L_DI-5	Circular	DI-5	CI-41	90.68	90.56	1.00	0.00	2.00	48.00	0.25	23	20.61	7.33	97.11	97.01	95.00
L_DI-6	Circular	DI-6	CI-43	89.70	89.57	1.00	0.00	2.50	77.00	0.17	44	21.16	8.97	97.06	96.89	94.10
L_DI-7	Circular	DI-7	MHI-26	90.06	89.93	1.00	0.00	2.00	116.00	0.11	12	16.08	3.88	96.73	96.71	94.30
L_DI-8	Circular	DI-8	CI-42	90.37	90.25	1.00	0.00	2.00	113.00	0.11	11	20.61	3.48	96.85	96.83	95.00
L_DI-9	Circular	DI-9	CI-44	89.73	89.59	1.00	0.00	2.00	125.00	0.11	10	20.61	3.22	96.30	96.22	92.50

Table 4.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 9-16

Model: US290_SegB_EX_A&AA_NS(final).xp & US290_SegB_EX_B-G_NS_1(final).xp **7/12/2011**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_E117-3	Natural	E117-3	MHI-37X	78.53	78.81	1.00	0.00	0.00	42.00	-0.67	1865	17.55	1.27	94.24	94.24	112.44
L_E117-4	Natural	E117-4	E117-3	78.59	78.53	1.00	0.00	0.00	263.00	0.02	1865	17.55	1.22	94.24	94.24	115.44
L_GES-1	Circular	GES-1	GES-2	81.87	81.40	1.00	0.00	4.00	238.00	0.20	102	16.96	7.99	97.48	96.51	93.50
L_GES-2	Circular	GES-2	GES-3	81.40	80.91	1.00	0.00	4.00	240.00	0.20	93	25.33	7.35	96.51	95.62	93.50
L_GES-3	Circular	GES-3	GES-4	80.41	79.47	1.00	0.00	4.50	668.00	0.14	90	19.01	5.58	95.62	94.35	93.00
L_GES-4	Circular	GES-4	CI-54BX	79.47	78.81	1.00	0.00	4.50	22.00	3.00	97	19.46	6.01	94.35	94.25	90.80
Link732	Circular	JCT-12C	MHI-37X	81.25	81.22	1.00	0.00	7.50	21.00	0.14	283	15.76	6.39	94.44	94.24	93.00
L_JCT-40	Circular	JCT-40	MHI-26	87.75	87.43	1.00	0.00	4.50	176.00	0.18	129	16.53	8.07	97.46	96.71	95.42
L_MHI-34	Circular	JCT-52	MHI-36	83.47	83.05	1.00	0.00	7.00	300.00	0.14	262	15.81	6.78	95.29	94.93	93.54
Link681	Circular	JCT-56B	JCT-12C	81.36	81.25	1.00	0.00	7.50	79.00	0.14	274	15.77	6.20	94.51	94.44	92.50
L_MH-10	Circular	MH-10	MH-8	82.11	81.79	1.00	0.00	4.00	161.00	0.20	32	15.83	2.54	94.19	94.19	91.92
Link709	Circular	MH-10A	MH-10	86.11	86.06	1.00	0.00	2.00	25.00	0.20	-14	16.28	3.30	94.20	94.19	91.55
L_MH-11	Circular	MH-11	MH-10	84.64	83.11	1.00	0.00	3.00	529.00	0.29	20	15.83	2.78	94.27	94.19	93.50
L_MH-6	Circular	MH-6	MHI-28	85.68	85.51	1.00	0.00	6.00	143.00	0.12	174	15.65	6.13	96.59	96.19	98.00
L_MH-7	Circular	MH-7	MH-8	82.93	82.72	1.00	0.00	4.00	97.00	0.22	-22	16.26	0.59	94.19	94.19	92.50
Link711	Circular	MH-7A	MH-7	83.00	82.93	1.00	0.00	4.00	35.00	0.20	-22	16.26	0.59	94.19	94.19	93.40
L_MH-8	Circular	MH-8	AA-OUT1	80.29	80.00	1.00	0.00	5.50	164.00	0.18	-54	16.26	1.73	94.19	94.18	91.80
Link710	Circular	MH-9	MH-10A	86.57	86.11	1.00	0.00	2.00	207.00	0.22	7	24.63	2.23	94.25	94.20	92.30
L_MHI-21	Circular	MHI-21	MHI-22	91.30	90.87	1.00	0.00	2.50	155.00	0.28	54	20.07	10.86	100.01	99.12	97.25
L_MHI-22	Circular	MHI-22	MHI-24	89.87	89.34	1.00	0.00	3.50	250.00	0.21	63	19.84	6.53	99.12	98.81	97.80
L_MHI-23	Circular	MHI-23	MHI-24	90.63	90.34	1.00	0.00	2.50	170.00	0.17	22	20.07	4.39	98.82	98.81	96.50
L_MHI-24	Circular	MHI-24	JCT-40	88.34	87.75	1.00	0.00	4.50	324.00	0.18	128	17.92	8.00	98.81	97.46	97.55
L_MHI-25	Circular	MHI-25	MHI-26	89.19	88.93	1.00	0.00	3.00	164.00	0.16	35	20.61	4.88	96.81	96.71	95.51
L_MHI-26	Circular	MHI-26	MH-6	85.93	85.68	1.00	0.00	6.00	195.00	0.13	174	15.65	6.13	96.71	96.59	96.30
L_MHI-27	Circular	MHI-27	MHI-28	88.77	88.51	1.00	0.00	3.00	161.00	0.16	28	20.61	3.87	96.22	96.19	94.67
L_MHI-28	Circular	MHI-28	MHI-30	85.01	84.72	1.00	0.00	6.50	235.00	0.12	200	15.80	6.00	96.19	95.90	95.47
L_MHI-29	Circular	MHI-29	MHI-30	89.99	89.72	1.00	0.00	1.50	161.00	0.17	16	22.18	8.90	97.06	95.90	94.09
L_MHI-30	Circular	MHI-30	MHI-32	84.22	83.89	1.00	0.00	7.00	301.00	0.11	218	15.90	5.64	95.90	95.62	97.47
L_MHI-31	Circular	MHI-31	MHI-32	89.15	88.89	1.00	0.00	2.00	170.00	0.15	10	21.25	3.24	95.63	95.62	93.31
L_MHI-32	Circular	MHI-32	MHI-34	83.89	83.61	1.00	0.00	7.00	230.00	0.12	224	15.95	5.79	95.62	95.40	94.12
L_MHI-33	Circular	MHI-33	MHI-34	88.87	88.61	1.00	0.00	2.00	171.00	0.15	12	21.24	3.87	95.43	95.40	92.82
Link713	Circular	MHI-34	JCT-52	83.61	83.47	1.00	0.00	7.00	102.00	0.14	261	15.81	6.76	95.40	95.29	93.54
L_MHI-35	Circular	MHI-35	MHI-36	88.36	88.05	1.00	0.00	2.00	207.00	0.15	10	21.36	2.99	94.93	94.93	92.40
L_MHI-36	Circular	MHI-36	MHI-37	82.05	81.57	1.00	0.00	7.50	400.00	0.12	267	15.76	6.02	94.93	94.62	92.54
L_MHI-36A	Circular	MHI-36A	CI-54B	87.71	87.66	1.00	0.00	1.50	53.00	0.09	3	24.22	1.92	94.28	94.27	92.56
L_MHI-37	Circular	MHI-37	JCT-56B	81.57	81.36	1.00	0.00	7.50	139.00	0.15	273	15.77	6.17	94.62	94.51	92.54
L_E117-2	Natural	MHI-37X	MHI-56X	78.81	79.61	1.00	0.00	0.00	84.00	-0.95	2102	17.80	1.65	94.24	94.23	112.44
L_MHI-38	Circular	MHI-38	MHI-38X	86.37	85.71	1.00	0.00	2.50	285.00	0.23	-15	16.28	1.38	94.19	94.25	92.25
L_E117-5	Natural	MHI-38X	E117-4	78.59	78.59	1.00	0.00	0.00	47.00	0.00	1863	17.55	1.48	94.25	94.24	115.44
L_MHI-39	Circular	MHI-39	MHI-40	85.47	85.25	1.00	0.00	3.00	181.00	0.12	15	23.58	2.16	94.29	94.28	92.33
L_MHI-40	Circular	MHI-40	MH-11	84.75	84.70	1.00	0.00	3.00	24.00	0.21	18	15.83	2.54	94.28	94.27	92.23
L_E117-1	Natural	MHI-56X	AA-OUT1	79.61	78.62	1.00	0.00	0.00	293.00	0.34	2125	17.81	3.06	94.23	94.18	112.44
Outfalls 11																
L-B-1	**Natural**	**B-1**	**SYS-B-OUT**	**81.21**	**79.26**	**1.00**	**0.00**	**0.00**	**330.00**	**0.59**	**598**	**18.75**	**4.17**	**91.78**	**91.64**	**93.00**
L-B-2	Natural	B-2	B-1	82.18	81.21	1.00	0.00	0.00	168.00	0.58	598	18.74	4.73	91.82	91.78	93.97
L-B-3	Natural	B-3	B-2	82.34	82.18	1.00	0.00	0.00	89.00	0.18	598	18.73	2.76	91.83	91.82	92.15
L-B-4	Natural	B-4	B-3	83.20	82.34	1.00	0.00	6.80	314.00	0.27	575	19.30	1.94	91.91	91.83	92.00
L-B-5	Natural	B-5	B-4	83.39	83.20	1.00	0.00	0.00	60.00	0.32	575	19.26	1.66	**91.92**	91.91	93.26
L-B-6	Natural	B-6	B-5	83.86	83.39	1.00	0.00	0.00	238.00	0.20	575	19.26	5.15	92.65	91.92	93.73
L_CI-67	Circular	CI-67	MHI-41	87.02	86.96	1.00	0.00	2.50	47.00	0.13	4	16.26	0.72	92.03	92.02	93.09
L_CI-68	Circular	CI-68	MHI-42	87.61	87.50	1.00	0.00	1.50	52.00	0.21	3	16.25	2.47	91.97	91.95	92.98
L_CI-69	Circular	CI-69	CI-70	87.24	87.00	1.00	0.00	1.50	240.00	0.10	7	30.06	3.85	91.97	92.07	91.57
L_CI-70	Circular	CI-70	MHI-43	86.50	86.45	1.00	0.00	2.00	49.00	0.10	22	27.00	7.06	92.07	91.94	91.86
L_CI-71	Circular	CI-71	CI-72	87.04	86.79	1.00	0.00	1.50	221.00	0.11	2	16.25	1.17	92.25	91.85	92.45
L_CI-72	Circular	CI-72	MHI-44	86.29	85.23	1.00	0.00	2.00	55.00	1.93	4	16.25	1.32	91.85	91.84	91.78
L_CI-73	Circular	CI-73	MHI-45	86.81	86.28	1.00	0.00	1.50	232.00	0.23	8	30.87	4.20	91.84	91.84	90.97
L_CI-73A	Circular	CI-73A	CI-75	85.81	85.59	1.00	0.00	1.50	102.00	0.22	3	16.25	1.49	91.84	91.84	90.42
L_CI-74	Circular	CI-74	MHI-45	86.38	86.28	1.00	0.00	1.50	50.00	0.20	9	29.83	4.98	91.84	91.84	90.97

Table 4.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 9-16

Model: US290_SegB_EX_A&AA_NS(final).xp & US290_SegB_EX_B-G_NS_1(final).xp **7/12/2011**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_CI-75	Circular	CI-75	CI-76	85.59	85.36	1.00	0.00	1.50	100.00	0.23	3	16.25	1.89	91.84	91.84	90.59
L_CI-76	Circular	CI-76	MHI-46	84.86	84.79	1.00	0.00	2.00	44.00	0.16	5	16.25	1.61	91.84	91.84	90.81
L_CI-77A	Circular	CI-77A	CI-77B	85.58	85.32	1.00	0.00	1.50	150.00	0.17	7	31.37	3.96	91.84	91.84	90.23
L_CI-77B	Circular	CI-77B	CI-78	84.82	84.56	1.00	0.00	2.00	148.00	0.18	8	30.98	2.44	91.84	91.84	89.81
L_CI-78	Circular	CI-78	MHI-47	84.56	84.46	1.00	0.00	2.00	36.00	0.28	-11	16.58	2.59	91.84	91.84	90.24
L_CI-78A	Circular	CI-78A	JCT-78A	84.35	83.99	1.00	0.00	1.50	34.00	1.06	-3	16.47	1.26	91.84	91.84	90.72
L_CI-79	Circular	CI-79	CI-80	84.61	84.51	1.00	0.00	1.50	100.00	0.10	8	30.81	4.55	91.84	91.84	90.87
L_CI-80	Circular	CI-80	MHI-48	84.01	83.95	1.00	0.00	2.00	50.00	0.12	8	30.81	2.59	91.84	91.83	90.59
L_CI-81	Circular	CI-81	MHI-49	85.01	83.25	1.00	0.00	1.50	51.00	3.45	8	29.60	4.57	91.84	91.84	91.08
L_CI-81A	Circular	CI-81A	CI-81	85.08	85.01	1.00	0.00	1.50	50.00	0.14	7	29.54	3.91	91.84	91.84	91.21
L_CI-82	Circular	CI-82	MHI-50	85.26	85.21	1.00	0.00	1.50	51.00	0.10	3	16.25	1.93	91.85	91.84	91.00
Link687	Circular	CI-82A	MHI-50A	85.71	85.66	1.00	0.00	1.50	50.00	0.10	10	31.17	5.34	91.83	91.82	90.58
L_JCT-78A	Circular	JCT-78A	B-3	81.46	80.94	1.00	0.00	4.50	200.00	0.26	68	15.85	4.28	91.84	91.83	90.06
L_MH-B1	Circular	MH-B1	MH-B2	80.92	80.76	1.00	0.00	3.00	115.47	0.14	54	16.18	7.44	93.20	92.70	92.29
L_MH-B2	Circular	MH-B2	MHI-50S	80.76	80.55	1.00	0.00	3.00	148.17	0.14	50	16.06	7.00	92.70	92.14	91.38
L_MHI-41	Circular	MHI-41	MHI-42	86.96	86.50	1.00	0.00	2.50	204.00	0.23	13	16.25	2.57	92.02	91.95	92.06
L_MHI-42	Circular	MHI-42	MHI-44	86.00	85.23	1.00	0.00	3.00	365.00	0.21	25	16.25	3.53	91.95	91.84	91.91
L_MHI-43	Circular	MHI-43	MHI-44	85.95	85.73	1.00	0.00	2.50	183.00	0.12	13	15.91	2.73	91.94	91.84	90.50
L_MHI-44	Circular	MHI-44	MHI-45	84.23	83.78	1.00	0.00	4.00	301.00	0.15	46	15.92	3.66	91.84	91.84	90.76
L_MHI-45	Circular	MHI-45	MHI-47	83.78	82.35	1.00	0.00	4.00	550.00	0.26	56	16.02	4.44	91.84	91.84	89.86
L_MHI-46	Circular	MHI-46	MHI-47	83.54	83.21	1.00	0.00	2.50	252.00	0.13	-12	16.63	1.50	91.84	91.84	88.76
L_MHI-47	Circular	MHI-47	JCT-78A	81.85	81.46	1.00	0.00	4.50	149.00	0.26	66	15.85	4.16	91.84	91.84	89.06
L_MHI-48	Circular	MHI-48	MHI-49	83.45	83.25	1.00	0.00	2.50	200.00	0.10	-14	16.89	2.30	91.83	91.84	88.36
L_MHI-49	Circular	MHI-49	MHI-50	82.75	82.53	1.00	0.00	3.00	180.00	0.12	-25	16.60	2.46	91.84	91.84	88.81
L_MHI-50	Circular	MHI-50	B-3	79.27	78.64	1.00	0.00	4.00	249.00	0.25	62	15.84	4.88	91.84	91.83	89.06
Link688	Circular	MHI-50A	MHI-50	85.66	85.26	1.00	0.00	1.50	200.00	0.20	6	31.17	3.55	91.82	91.84	89.31
Link741	Circular	MHI-50S	MHI-50	80.26	79.77	1.00	0.00	3.50	371.49	0.13	50	16.06	5.16	92.14	91.84	91.50
Outfalls 12																
L-C-1	**Natural**	**C-1**	**SYS-C-OUT**	**82.44**	**82.31**	**1.00**	**0.00**	**0.00**	**266.00**	**0.05**	**211**	**16.00**	**1.65**	**91.20**	**91.20**	**95.00**
L-C-2	Natural	C-2	C-1	77.88	82.44	1.00	6.00	0.00	35.00	-13.03	218	16.00	1.11	91.20	91.20	90.50
Link714	Circular	CI-83	MHI-51	85.63	85.58	1.00	0.00	1.50	50.00	0.10	9	27.91	5.10	91.21	91.21	90.98
L_CI-84	Circular	CI-84	MHI-52	85.43	85.33	1.00	0.00	1.50	50.00	0.20	12	30.03	6.55	91.20	91.20	90.34
L_CI-85	Circular	CI-85	CI-86	84.59	84.42	1.00	0.00	1.50	150.00	0.11	8	30.57	4.23	91.92	92.01	90.31
L_CI-86	Circular	CI-86	CI-87	83.92	83.79	1.00	0.00	2.00	109.00	0.12	10	29.27	3.23	92.01	92.05	89.96
L_CI-87	Circular	CI-87	MHI-53	80.65	80.53	1.00	0.00	4.50	55.00	0.22	161	16.51	10.02	92.05	91.79	90.20
L_CI-88	Circular	CI-88	JCT-54	82.06	81.96	1.00	0.00	1.50	95.00	0.11	9	30.45	4.77	91.20	91.20	90.02
L_CI-89	Circular	CI-89	JCT-54	81.53	81.46	1.00	0.00	2.00	55.00	0.13	8	30.76	2.63	91.20	91.20	89.74
L_CI-90	Circular	CI-90	CI-89	82.13	82.03	1.00	0.00	1.50	100.00	0.10	8	30.69	4.62	91.20	91.20	89.95
L_CI-91	Circular	CI-91	CI-92	84.91	84.80	1.00	0.00	1.50	100.00	0.11	11	31.35	5.90	91.21	91.20	89.64
L_CI-92	Circular	CI-92	MH-13	84.30	84.26	1.00	0.00	2.00	32.00	0.12	21	30.92	6.72	91.20	91.20	88.71
L_CI-93	Circular	CI-93	CI-94	83.05	82.88	1.00	0.00	3.50	100.00	0.17	37	31.29	3.86	91.21	91.21	89.30
L_CI-94	Circular	CI-94	MH-13	82.38	82.00	1.00	0.00	4.00	251.00	0.15	25	31.29	1.95	91.21	91.20	88.97
L_CI-95A	Circular	CI-95A	MHI-55	84.91	84.83	1.00	0.00	1.50	38.00	0.21	9	31.08	4.98	91.20	91.20	89.63
L_CI-96A	Circular	CI-96A	MHI-56	84.66	84.58	1.00	0.00	1.50	41.00	0.20	10	31.09	5.79	91.20	91.20	89.68
L-JCT-54	Circular	JCT-54	MHI-54X	77.96	77.88	1.00	0.00	6.50	54.00	0.15	219	16.01	6.58	91.20	91.20	88.96
Link691	Circular	MH-12	MHI-54	80.78	79.80	1.00	0.00	4.00	327.00	0.30	64	30.95	5.06	91.20	91.20	90.16
L_MH-13	Circular	MH-13	MHI-56	82.00	81.68	1.00	0.00	4.00	200.00	0.16	28	30.91	2.23	91.20	91.20	89.69
L_CI-83	Circular	MHI-51	MHI-52	85.08	84.83	1.00	0.00	2.00	182.00	0.14	11	16.00	3.53	91.21	91.20	89.46
L_MHI-52	Circular	MHI-52	MHI-54	84.33	83.67	1.00	0.00	2.50	274.00	0.24	24	15.94	4.88	91.20	91.20	88.96
L_MHI-53	Circular	MHI-53	MHI-54	80.53	80.05	1.00	0.00	4.50	213.00	0.23	149	16.10	9.31	91.79	91.20	89.06
L_MHI-54	Circular	MHI-54	JCT-54	78.05	77.96	1.00	0.00	6.50	57.00	0.16	213	16.01	6.40	91.20	91.20	88.96
L-MHI-54X	Natural	MHI-54X	C-2	77.88	77.88	1.00	0.00	0.00	10.00	0.00	219	16.02	0.79	91.20	91.20	90.50
L_MHI-55	Circular	MHI-55	MHI-56	84.33	83.74	1.00	0.00	2.00	203.00	0.29	10	31.40	3.26	91.20	91.20	88.56
L_MHI-56	Circular	MHI-56	MH-12	81.68	80.78	1.00	0.00	4.00	301.00	0.30	53	30.92	4.20	91.20	91.20	88.46
Outfalls 13																
L_CI-100	Circular	CI-100	MH-16	82.91	82.82	1.00	0.00	1.50	29.00	0.31	7	16.20	3.82	89.32	89.31	87.96
L_CI-100A	Circular	CI-100A	MH-18	81.93	81.73	1.00	0.00	1.50	39.00	0.51	6	16.25	3.46	89.18	89.18	88.26
L_CI-100B	Circular	CI-100B	CI-100A	82.01	81.93	1.00	0.00	1.50	50.00	0.16	6	16.25	3.46	89.18	89.18	88.38

Table 4.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 9-16

Model: US290_SegB_EX_A&AA_NS(final).xp & US290_SegB_EX_B-G_NS_1(final).xp **7/12/2011**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_CI-101	Circular	CI-101	CI-102	82.96	82.70	1.00	0.00	1.50	135.00	0.19	10	32.23	5.53	89.39	89.39	88.18
L_CI-102	Circular	CI-102	MH-19	81.70	81.61	1.00	0.00	2.50	41.00	0.22	10	31.78	2.07	89.39	89.39	87.75
L_CI-102A	Circular	CI-102A	JCT102A	81.79	81.56	1.00	0.00	1.50	95.00	0.24	7	31.86	3.75	89.42	89.42	87.66
L_CI-103	Circular	CI-103	MH-18B	82.91	82.86	1.00	0.00	1.50	29.00	0.17	3	16.24	2.04	89.14	89.14	88.10
L_CI-104	Circular	CI-104	MH-20	82.33	82.28	1.00	0.00	1.50	29.00	0.17	4	32.76	2.23	89.14	89.14	87.38
L_CI-105	Circular	CI-105	MHI-65	82.07	81.96	1.00	0.00	1.50	50.00	0.22	5	33.01	2.51	89.14	89.14	87.12
L_CI-106	Circular	CI-106	MHI-66	82.68	82.62	1.00	0.00	1.50	50.00	0.12	9	33.27	5.16	89.14	89.14	87.59
L_CI-107A	Circular	CI-107A	MHI-61	81.97	81.86	1.00	0.00	1.50	50.00	0.22	12	33.69	7.17	89.14	89.14	87.34
L_CI-107B	Circular	CI-107B	MHI-63	82.08	81.99	1.00	0.00	1.50	50.00	0.18	5	33.32	2.88	89.14	89.14	87.12
L_CI-108	Circular	CI-108	MHI-64	81.96	81.85	1.00	0.00	1.50	61.00	0.18	12	33.69	6.61	89.14	89.14	87.47
L_CI-95B	Circular	CI-95B	MHI-57	84.56	84.50	1.00	0.00	1.50	50.00	0.12	18	16.51	10.14	92.02	90.91	89.49
L_CI-96B	Circular	CI-96B	MH-14	84.28	84.25	1.00	0.00	1.50	29.00	0.10	3	16.25	1.86	90.02	90.02	89.33
L_CI-97	Circular	CI-97	MHI-59	83.76	83.65	1.00	0.00	1.50	50.00	0.22	9	30.86	5.06	89.49	89.49	88.74
L_CI-98	Circular	CI-98	MH-15	83.44	83.38	1.00	0.00	1.50	29.00	0.21	4	16.26	1.99	89.48	89.48	88.49
L_CI-99	Circular	CI-99	CI-100	82.96	82.91	1.00	0.00	1.50	50.00	0.10	-3	16.53	1.65	89.32	89.32	88.07
L-D-1	**Rectangular**	**D-1**	**SYS-D-OUT**	**71.66**	**70.96**	**1.00**	**8.00**	**12.00**	**160.00**	**0.44**	**606**	**17.27**	**6.30**	**89.14**	**89.14**	**88.00**
L_JCT102A	Rectangular	JCT102A	JCT-19	72.11	72.06	1.00	8.00	12.00	50.00	0.10	610	17.27	6.34	89.42	89.38	88.04
L_JCT-18A	Rectangular	JCT-18A	MH-18	71.82	71.77	1.00	8.00	12.00	50.00	0.10	606	17.27	6.29	89.21	89.18	87.64
L-JCT-19	Rectangular	JCT-19	JCT-18A	72.06	71.82	1.00	8.00	12.00	245.00	0.10	610	17.27	6.34	89.38	89.21	87.55
L_MH-14	Circular	MH-14	MH-15	83.02	82.51	1.00	0.00	2.50	301.00	0.17	24	15.68	4.83	90.02	89.48	89.38
L_MH-15	Circular	MH-15	MH-16	80.61	80.51	1.00	0.00	3.00	198.00	0.05	37	16.07	5.20	89.48	89.31	88.54
L_MH-16	Circular	MH-16	MH-17	78.12	77.78	1.00	0.00	3.50	140.00	0.24	43	16.07	4.47	89.31	89.26	88.51
L_MH-17	Circular	MH-17	JCT-18A	76.05	75.79	1.00	0.00	3.50	114.00	0.23	43	16.07	4.45	89.26	89.21	88.32
L-MH-18	Rectangular	MH-18	D-1	71.77	71.66	1.00	8.00	12.00	100.00	0.11	607	17.27	6.31	89.18	89.14	87.64
L_MH-18A	Circular	MH-18A	JCT-18A	76.82	75.79	1.00	0.00	3.50	281.00	0.37	73	33.18	7.55	89.14	89.21	88.78
L_MH-18B	Circular	MH-18B	MH-18A	77.57	76.82	1.00	0.00	3.50	217.00	0.35	73	33.18	7.54	89.14	89.14	88.15
L_MH-19	Circular	MH-19	JCT-19	81.61	81.15	1.00	0.00	2.50	174.00	0.26	10	31.78	2.12	89.39	89.38	88.45
L_MH-20	Circular	MH-20	MH-18B	78.82	78.07	1.00	0.00	3.50	251.00	0.30	73	33.21	7.57	89.14	89.14	87.43
L-MH-D2	Rectangular	MH-D2	JCT102A	72.26	72.11	1.00	8.00	12.00	150.00	0.10	612	17.27	6.36	89.54	89.42	88.04
L_MHI-57	Circular	MHI-57	MHI-58	84.00	83.54	1.00	0.00	2.00	184.00	0.25	16	15.54	5.04	90.91	90.14	88.02
L_MHI-58	Circular	MHI-58	MH-14	83.54	83.52	1.00	0.00	2.00	21.00	0.10	22	15.68	6.98	90.14	90.02	87.69
L_MHI-59	Circular	MHI-59	MHI-60	82.65	82.45	1.00	0.00	2.50	182.00	0.11	10	16.16	1.95	89.49	89.48	88.30
L_MHI-60	Circular	MHI-60	MH-15	82.45	82.42	1.00	0.00	2.50	21.00	0.14	15	16.07	3.08	89.48	89.48	88.02
L_MHI-61	Circular	MHI-61	MHI-63	81.36	81.09	1.00	0.00	2.00	100.00	0.27	31	33.58	9.86	89.14	89.14	86.27
L_MHI-62	Circular	MHI-62	MH-20	80.35	80.32	1.00	0.00	2.00	21.00	0.14	11	32.94	3.57	89.14	89.14	86.57
L_MHI-63	Circular	MHI-63	MHI-65	80.09	79.78	1.00	0.00	3.00	182.00	0.17	67	33.39	9.41	89.14	89.14	86.02
L_MHI-64	Circular	MHI-64	MHI-63	81.35	81.09	1.00	0.00	2.00	153.00	0.17	34	33.70	10.69	89.14	89.14	86.40
L_MHI-65	Circular	MHI-65	MH-20	79.02	78.82	1.00	0.00	3.50	102.00	0.20	74	33.20	7.63	89.14	89.14	86.02
L_MHI-66	Circular	MHI-66	MHI-65	82.12	81.92	1.00	0.00	2.00	200.00	0.10	12	33.28	3.83	89.14	89.14	86.92
Outfalls 14																
L_CI-109	Circular	CI-109	CI-110	82.09	81.84	1.00	0.00	1.50	250.00	0.10	2	16.26	1.09	86.73	86.73	87.84
L_CI-110	Circular	CI-110	CI-111	81.34	81.09	1.00	0.00	2.00	250.00	0.10	4	16.26	1.22	86.73	86.73	87.09
L_CI-111	Circular	CI-111	MHI-68	81.09	81.00	1.00	0.00	2.00	45.00	0.20	6	16.25	1.86	86.73	86.73	86.56
L_CI-112A	Circular	CI-112A	CI-112B	81.86	81.61	1.00	0.00	1.50	140.00	0.18	3	16.50	1.86	86.94	86.86	87.37
L_CI-112B	Circular	CI-112B	CI-113	80.11	79.91	1.00	0.00	3.00	184.00	0.11	34	16.25	4.79	86.86	86.73	87.02
L_CI-113	Circular	CI-113	MHI-67	79.91	79.85	1.00	0.00	3.00	47.00	0.13	36	16.25	4.99	86.73	86.73	86.56
L_CI-114	Circular	CI-114	MHI-70	80.52	80.46	1.00	0.00	2.00	50.00	0.12	9	29.57	2.74	86.73	86.73	86.09
L_CI-115	Circular	CI-115	CI-114	81.12	81.02	1.00	0.00	1.50	100.00	0.10	9	29.57	4.87	86.73	86.73	86.30
L_CI-116	Circular	CI-116	MHI-69	80.52	80.46	1.00	0.00	2.00	47.00	0.13	8	29.27	2.38	86.73	86.73	86.09
L_CI-117	Circular	CI-117	CI-116	81.12	81.02	1.00	0.00	1.50	100.00	0.10	8	29.27	4.21	86.73	86.73	86.30
L_CI-118	Circular	CI-118	JCT-72	78.13	78.06	1.00	0.00	1.50	73.00	0.10	10	29.01	5.34	86.72	86.72	86.44
L_CI-119	Circular	CI-119	JCT-72	77.64	77.56	1.00	0.00	2.00	78.00	0.10	7	30.33	2.13	86.72	86.72	85.09
L_CI-120	Circular	CI-120	CI-119	78.29	78.14	1.00	0.00	1.50	150.00	0.10	3	30.27	1.78	86.72	86.72	84.44
Link715	Circular	CI-121	CI-122	80.95	80.85	1.00	0.00	1.50	99.00	0.10	9	29.47	5.09	86.73	86.72	86.31
L_CI-122	Circular	CI-122	MHI-71	77.28	77.20	1.00	0.00	4.00	52.00	0.15	20	16.50	2.74	86.72	86.72	86.09
L_CI-124	Circular	CI-124	MHI-73	81.51	81.41	1.00	0.00	1.50	50.00	0.20	9	29.75	5.09	86.73	86.73	86.06
L_CI-125	Circular	CI-125	MHI-74	81.04	80.95	1.00	0.00	1.50	50.00	0.18	10	29.77	5.80	86.73	86.73	86.06
L_CI-126	Circular	CI-126	MH-24	81.04	80.99	1.00	0.00	1.50	50.00	0.10	-6	16.25	1.81	87.32	87.32	84.77
L_CI-127	Circular	CI-127	MHI-75	79.95	79.86	1.00	0.00	3.00	50.00	0.18	51	16.85	7.13	87.19	87.05	85.59
L_CI-128	Circular	CI-128	MHI-76	80.54	80.49	1.00	0.00	2.00	47.00	0.11	10	30.46	3.00	86.74	86.74	85.69

Table 4.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 9-16

Model: US290_SegB_EX_A&AA_NS(final).xp & US290_SegB_EX_B-G_NS_1(final).xp **7/12/2011**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_CI-129	Circular	CI-129	CI-128	81.14	81.04	1.00	0.00	1.50	100.00	0.10	10	30.47	5.31	86.74	86.74	85.81
L_DI-15	Circular	DI-15	MH-21	81.27	81.25	1.00	0.00	1.50	21.00	0.10	11	17.36	6.32	89.89	89.66	84.99
L-E-1	**Natural**	**E-1**	**SYS-E-OUT**	**78.32**	**78.00**	**1.00**	**0.00**	**0.00**	**320.00**	**0.10**	**199**	**16.10**	**3.70**	**86.72**	**86.72**	**91.10**
L-E-2	Natural	E-2	E-1	73.96	78.32	1.00	0.00	0.00	65.00	-6.71	202	16.17	1.28	86.72	86.72	87.00
L_JCT-72	Circular	JCT-72	MHI-72X	74.06	73.96	1.00	0.00	6.50	57.00	0.18	204	16.17	6.12	86.72	86.72	84.68
L_MH-21	Circular	MH-21	MH-22	81.25	81.18	1.00	0.00	1.50	69.00	0.10	11	17.36	6.33	89.66	88.92	86.29
L_MH-22	Circular	MH-22	MHI-71	81.18	80.93	1.00	0.00	1.50	254.00	0.10	11	17.36	6.37	88.92	86.72	85.63
L_MH-23	Circular	MH-23	MHI-72	77.30	76.83	1.00	0.00	4.00	293.00	0.16	65	16.14	5.19	86.72	86.72	83.70
L_MH-24	Circular	MH-24	CI-127	79.99	79.95	1.00	0.00	3.00	35.00	0.11	55	16.75	7.72	87.32	87.19	85.15
L_MHI-67	Circular	MHI-67	MHI-68	79.85	79.47	1.00	0.00	3.00	190.00	0.20	38	16.34	5.35	86.73	86.73	85.29
L_MHI-68	Circular	MHI-68	MHI-70	78.97	78.55	1.00	0.00	3.50	202.00	0.21	52	16.26	5.34	86.73	86.73	85.29
L_MHI-69	Circular	MHI-69	MHI-70	79.96	79.74	1.00	0.00	2.50	183.00	0.12	13	16.01	2.73	86.73	86.73	84.79
L_MHI-70	Circular	MHI-70	MHI-72	78.05	76.66	1.00	0.00	4.00	559.00	0.25	76	16.17	6.02	86.73	86.72	84.79
L_MH-71	Circular	MHI-71	MHI-72	77.20	76.84	1.00	0.00	4.00	186.00	0.19	44	16.25	3.51	86.72	86.72	84.79
L_MHI-72	Circular	MHI-72	JCT-72	74.16	74.06	1.00	0.00	6.50	60.00	0.17	198	16.17	5.95	86.72	86.72	84.68
L-MHI-72X	Natural	MHI-72X	E-2	73.96	73.96	1.00	0.00	0.00	10.00	0.00	203	16.17	0.90	86.72	86.72	87.00
L_MHI-73	Circular	MHI-73	MHI-74	80.91	80.49	1.00	0.00	2.00	182.00	0.23	7	29.82	2.31	86.73	86.73	84.79
L_MHI-74	Circular	MHI-74	MH-23	77.86	77.30	1.00	0.00	4.00	350.00	0.16	65	16.14	5.19	86.73	86.72	84.89
L_MHI-75	Circular	MHI-75	MHI-76	79.36	79.12	1.00	0.00	3.00	186.00	0.13	42	16.25	5.94	87.05	86.74	83.99
L_MHI-76	Circular	MHI-76	MHI-74	78.62	78.36	1.00	0.00	3.50	201.00	0.13	51	16.14	5.26	86.74	86.73	84.19
Outfalls 15																
L_CI-130	Circular	CI-130	CI-131	80.52	80.04	1.00	0.00	1.50	250.00	0.19	9	29.70	4.88	85.70	85.42	85.54
L_CI-131	Circular	CI-131	CI-132	79.54	79.40	1.00	0.00	2.00	100.00	0.14	16	29.72	5.20	85.42	85.42	84.92
L_CI-132	Circular	CI-132	MHI-78	78.90	78.83	1.00	0.00	2.50	61.00	0.11	17	29.72	3.35	85.42	85.42	84.70
L_CI-133	Circular	CI-133	CI-134	80.52	80.04	1.00	0.00	1.50	250.00	0.19	8	29.74	4.48	85.68	85.42	85.54
L_CI-134	Circular	CI-134	CI-135	79.54	79.40	1.00	0.00	2.00	100.00	0.14	12	29.76	3.81	85.42	85.42	84.92
L_CI-135	Circular	CI-135	MHI-77	78.90	78.78	1.00	0.00	2.50	62.00	0.19	33	16.25	6.70	85.42	85.42	84.70
L_CI-136	Circular	CI-136	CI-135	80.23	79.90	1.00	0.00	1.50	150.00	0.22	9	29.76	5.01	85.42	85.42	85.05
L_CI-137	Circular	CI-137	JCT137	75.97	75.73	1.00	0.00	1.50	107.00	0.22	9	29.67	5.20	85.41	85.41	85.05
L_CI-138	Circular	CI-138	MH-26	78.07	78.00	1.00	0.00	2.00	29.00	0.24	7	16.25	2.55	85.41	85.41	85.04
L_CI-139	Circular	CI-139	CI-138	78.27	78.07	1.00	0.00	2.00	200.00	0.10	5	30.69	1.53	85.41	85.41	84.54
Link700	Circular	CI-140	CI-139	78.99	78.77	1.00	0.00	1.50	200.00	0.11	4	30.63	2.36	85.41	85.41	84.04
L_CI-141	Circular	CI-141	MH-28	78.79	78.68	1.00	0.00	1.50	39.00	0.28	9	30.07	5.09	85.41	85.41	83.84
L_CI-142	Circular	CI-142	CI-143	80.02	79.62	1.00	0.00	1.50	178.00	0.22	8	30.05	4.55	85.41	85.41	85.04
L_CI-143	Circular	CI-143	MH-27	77.62	77.42	1.00	0.00	3.50	130.00	0.15	11	29.15	1.18	85.41	85.41	84.62
L_CI-144	Circular	CI-144	MH-29	79.12	79.07	1.00	0.00	2.00	49.00	0.10	9	29.87	2.71	85.41	85.41	84.83
L_CI-145	Circular	CI-145	CI-144	79.74	79.62	1.00	0.00	1.50	116.00	0.10	8	29.92	4.60	85.41	85.41	85.09
L_CI-146	Circular	CI-146	MH-30	78.67	78.40	1.00	0.00	2.00	158.00	0.17	9	30.61	2.82	85.41	85.41	82.95
L_CI-147	Circular	CI-147	CI-146	79.41	79.18	1.00	0.00	1.50	150.00	0.15	8	30.85	4.51	85.42	85.41	84.12
L-F-1	**Natural**	**F-1**	**SYS-F-OUT**	**74.12**	**73.69**	**1.00**	**0.00**	**0.00**	**855.00**	**0.05**	**300**	**16.01**	**2.40**	**85.41**	**85.41**	**86.65**
L-F-OFF	Circular	F-OFFSITE	MHI-80	75.22	75.08	1.00	0.00	4.00	70.00	0.20	233	16.11	18.29	89.78	88.61	84.05
L_JCT137	Circular	JCT137	MHI-79X	71.80	71.73	2.00	0.00	5.00	49.00	0.14	323	16.18	8.19	85.41	85.41	83.79
L_MH-25	Circular	MH-25	MHI-79	74.39	73.89	1.00	0.00	4.50	274.00	0.18	35	16.26	2.22	85.41	85.41	85.59
L_MH-26	Circular	MH-26	MH-25	74.71	74.39	1.00	0.00	4.50	200.00	0.16	35	16.26	2.22	85.41	85.41	85.09
L_MH-27	Circular	MH-27	MH-28	77.42	77.02	1.00	0.00	3.50	265.00	0.15	11	29.16	1.18	85.41	85.41	84.98
L_MH-28	Circular	MH-28	MH-26	76.11	75.21	1.00	0.00	4.00	474.00	0.19	28	16.26	2.23	85.41	85.41	83.87
L_MH-29	Circular	MH-29	MH-30	79.07	78.76	1.00	0.00	2.00	262.00	0.12	9	29.91	2.69	85.41	85.41	85.00
L_MH-30	Circular	MH-30	MH-28	77.90	77.61	1.00	0.00	2.50	68.00	0.43	14	16.26	2.80	85.41	85.41	84.22
L_MHI-77	Circular	MHI-77	MHI-78	78.28	78.06	1.00	0.00	3.00	160.00	0.14	46	16.23	6.50	85.42	85.42	83.62
L_MHI-78	Circular	MHI-78	MHI-79	77.83	77.21	1.00	0.00	3.50	257.00	0.24	66	16.23	6.89	85.42	85.41	83.62
L-MHI-79	Circular	MHI-79	JCT137	71.88	71.80	2.00	0.00	5.00	49.00	0.16	321	16.18	8.13	85.41	85.41	83.79
L-MHI-79X	Natural	MHI-79X	F-1	71.73	71.73	1.00	0.00	0.00	10.00	0.00	323	16.18	1.37	85.41	85.41	87.32
L_MHI-80	Circular	MHI-80	MHI-79	75.08	74.49	1.00	0.00	4.00	229.00	0.26	217	15.93	17.11	88.61	85.41	84.05

Table 4.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 9-16

Model: US290_SegB_EX_A&AA_NS(final).xp & US290_SegB_EX_B-G_NS_1(final).xp **7/12/2011**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 16																
L_CI-148	Circular	CI-148	CI-149	79.39	78.78	1.00	0.00	1.50	275.00	0.22	10	15.68	5.58	86.62	85.36	84.59
L_CI-149	Circular	CI-149	MHI-81	78.28	78.19	1.00	0.00	2.00	50.00	0.18	22	23.34	6.94	85.36	85.23	83.90
L_CI-150	Circular	CI-150	MH-32	78.72	78.65	1.00	0.00	1.50	29.00	0.24	4	28.38	3.14	84.91	84.91	83.99
L_CI-151	Circular	CI-151	MHI-83	78.65	78.56	1.00	0.00	1.50	51.00	0.18	12	15.75	6.88	85.25	85.06	83.21
L_CI-152	Circular	CI-152	CI-153	78.14	77.78	1.00	0.00	1.50	190.00	0.19	8	26.52	4.32	84.81	84.81	83.29
L_CI-153	Circular	CI-153	MH-33	77.78	77.71	1.00	0.00	2.00	42.00	0.17	11	24.41	3.56	84.81	84.81	82.84
L_CI-154	Circular	CI-154	CI-155	76.89	76.57	1.00	0.00	1.50	170.00	0.19	8	15.68	4.32	85.23	85.04	82.52
L_CI-155	Circular	CI-155	MH-34	76.07	75.72	1.00	0.00	2.00	202.00	0.17	14	15.68	4.54	85.04	84.85	82.12
L_CI-155A	Circular	CI-155A	CI-155B	77.35	77.19	1.00	0.00	1.50	107.00	0.15	8	28.28	4.53	84.78	84.78	82.72
L_CI-155B	Circular	CI-155B	MH-34A	77.19	77.14	1.00	0.00	1.50	25.00	0.20	-12	17.10	6.38	84.78	84.80	82.72
L_CI-156	Circular	CI-156	MH-34	76.98	76.91	1.00	0.00	2.00	42.00	0.17	16	15.81	4.92	84.85	84.85	82.20
L_CI-157	Circular	CI-157	CI-156	77.72	77.48	1.00	0.00	1.50	201.00	0.12	7	28.39	3.98	84.87	84.85	82.67
L_CI-158	Circular	CI-158	MH-35	77.29	77.24	1.00	0.00	2.00	35.00	0.14	21	16.00	6.60	84.80	84.78	82.84
L_CI-159	Circular	CI-159	CI-158	78.05	77.79	1.00	0.00	1.50	200.00	0.13	11	15.84	5.96	84.89	84.80	83.31
L_CI-160	Circular	CI-160	MHI-85	78.32	78.24	1.00	0.00	1.50	78.00	0.10	9	25.60	5.18	84.85	84.84	83.22
L_CI-161	Circular	CI-161	MH-40	76.32	76.25	1.00	0.00	2.00	29.00	0.24	5	28.39	2.75	84.81	84.81	83.59
L-G-1	**Circular**	**G-1**	**SYS-G-OUT**	**68.21**	**68.11**	**1.00**	**0.00**	**6.50**	**100.00**	**0.10**	**296**	**16.15**	**8.88**	**84.20**	**84.15**	**81.62**
L-G-2	Circular	G-2	G-1	68.51	68.21	1.00	0.00	6.50	230.00	0.13	296	16.15	8.88	84.34	84.20	82.82
L-G-3	Circular	G-3	G-2	68.77	68.51	1.00	0.00	6.50	518.00	0.05	296	16.15	8.87	84.72	84.34	82.92
L-G-4	Circular	G-4	G-3	69.57	69.27	1.00	0.00	6.00	477.00	0.06	135	15.79	4.75	84.74	84.72	82.02
L_MH-31	Circular	MH-31	MH-32	76.79	76.43	1.00	0.00	3.00	224.00	0.16	36	15.78	5.09	85.02	84.91	84.57
L_MH-32	Circular	MH-32	MH-33	75.43	74.73	1.00	0.00	4.00	500.00	0.14	60	15.78	4.79	84.91	84.81	84.04
L_MH-33	Circular	MH-33	MH-36	74.73	74.48	1.00	0.00	4.00	140.00	0.18	64	15.78	5.09	84.81	84.78	82.95
L_MH-34	Circular	MH-34	MH-34A	75.22	75.01	1.00	0.00	2.50	82.00	0.26	28	15.71	5.60	84.85	84.80	82.32
L_MH-34A	Circular	MH-34A	MH-35	75.01	74.63	1.00	0.00	2.50	147.00	0.26	28	15.71	5.65	84.80	84.78	82.70
L_MH-35	Circular	MH-35	MH-36	73.03	72.92	1.00	0.00	4.00	70.00	0.16	71	15.84	5.65	84.78	84.78	82.94
L_MH-36	Circular	MH-36	G-4	71.42	70.07	1.00	0.00	5.50	424.00	0.32	135	15.79	5.66	84.78	84.74	83.94
L_MH-40	Circular	MH-40	MH-35	75.25	74.03	1.00	0.00	3.00	529.00	0.23	25	15.77	3.45	84.81	84.78	83.64
L_MHI-81A	Circular	MHI-81	MHI-82	77.69	77.34	1.00	0.00	2.50	182.00	0.19	27	15.84	5.42	85.23	85.03	83.28
L_MHI-82	Circular	MHI-82	MH-31	76.84	76.79	1.00	0.00	3.00	22.00	0.23	36	15.78	5.02	85.03	85.02	82.42
L_MHI-83	Circular	MHI-83	MHI-84	78.06	77.49	1.00	0.00	2.00	188.00	0.30	16	15.75	5.06	85.06	84.92	82.59
L_MHI-84	Circular	MHI-84	MH-32	76.99	76.93	1.00	0.00	2.50	22.00	0.27	23	15.75	5.53	84.92	84.91	82.21
L_MHI-85	Circular	MHI-85	MHI-86	77.74	77.27	1.00	0.00	2.00	162.00	0.29	14	15.76	4.39	84.84	84.81	82.05
L_MHI-86	Circular	MHI-86	MH-40	76.77	76.70	1.00	0.00	2.50	32.00	0.22	21	15.77	4.44	84.81	84.81	82.12

Table 5.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 17-19

Model: US290_SegA_Sys_BNGLHOL_Ext100-8-31-09.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 17-19																
E11504_1	**Rectangular**	**A102**	**E11504.1**	**71.38**	**70.92**	**1**	**8.00**	**5.00**	**221.00**	**0.21**	**221**	**20.63**	**5.50**	**82.56**	**82.35**	**80.50**
BNGL-2	Circular	BNGL01	MH-2	68.04	67.96	1	0.00	4.00	63.40	0.13	99	15.93	7.84	80.14	79.90	77.83
CI1-2	Circular	CI-1	CI-2	72.25	71.88	1	0.00	2.50	312.00	0.12	11	15.82	2.90	80.12	79.96	77.20
Link252	Circular	CI-161A	CI-163	77.58	76.97	1	0.00	1.50	275.00	0.22	8	16.97	4.68	85.21	83.53	82.28
L-CI-163	Circular	CI-163	CI-164	75.05	74.72	1	0.00	3.50	299.00	0.11	-25	15.24	1.22	83.53	83.50	81.81
L-CI-164	Circular	CI-164	CI-165	74.72	74.44	1	0.00	3.50	201.00	0.14	-36	15.24	2.44	83.50	83.45	81.10
L-CI-165	Circular	CI-165	MHI-88	73.94	73.88	1	0.00	4.00	51.00	0.12	36	16.02	2.86	83.45	83.45	80.50
L-CI-166	Circular	CI-166	CI-165	76.59	76.44	1	0.00	1.50	100.00	0.15	13	21.59	7.47	83.22	83.45	80.50
L-CI-162	Circular	CI-167	CI-168	77.70	77.25	1	0.00	1.50	250.00	0.18	7	15.58	3.83	84.13	83.71	82.25
L-CI-168	Circular	CI-168	MHI-87	76.75	76.70	1	0.00	2.00	44.00	0.11	15	15.76	4.70	83.71	83.68	81.82
L-CI-169	Circular	CI-169	CI-170	76.51	76.11	1	0.00	1.50	200.00	0.20	-5	16.52	2.20	83.42	83.41	81.05
L-CI-170	Circular	CI-170	MHI-89	75.61	75.55	1	0.00	2.00	47.00	0.13	12	21.36	3.83	83.41	83.40	80.04
L-CI-171	Circular	CI-171	MHI-91	76.10	76.05	1	0.00	1.50	50.00	0.10	23	16.48	12.32	86.66	85.56	81.50
Link255	Circular	CI-172	MHI-90	75.64	75.54	1	0.00	1.50	50.00	0.20	10	21.55	5.79	83.37	83.30	80.06
Link256	Circular	CI-173	CI-174	75.30	75.15	1	0.00	1.50	100.00	0.15	9	21.81	5.16	83.14	83.14	79.50
L-CI-174	Circular	CI-174	MHI-92	74.65	74.58	1	0.00	2.00	50.00	0.14	21	21.60	6.56	83.14	83.14	79.40
CI175-93	Circular	CI-175	MHI-93	72.38	72.28	1	0.00	4.00	50.00	0.20	105	19.91	8.30	84.06	83.82	81.00
L-CI-175s	Circular	CI-175S	CI-175	72.80	72.38	1	0.00	3.00	324.00	0.13	-9	16.41	1.23	84.06	84.06	81.84
L-CI-175	Circular	CI-176	CI-175	72.67	72.38	1	0.00	3.50	225.00	0.13	33	21.08	3.43	84.06	84.06	80.34
L-CI-177	Circular	CI-177	JCT-177	75.19	75.16	1	0.00	2.00	25.00	0.12	16	21.17	5.06	82.94	82.93	79.56
L-CI-179	Circular	CI-178	CI-179	75.26	75.19	1	0.00	1.50	65.00	0.11	10	15.56	5.61	83.44	83.19	80.00
L-MH96	Circular	CI-179	MHI-96	74.68	74.62	1	0.00	2.00	49.00	0.12	-56	15.35	4.82	83.19	83.16	79.57
Link262	Circular	CI-180	CI-181	75.55	75.45	1	0.00	1.50	100.00	0.10	-9	16.37	4.33	83.32	83.31	79.60
L-CI-181	Circular	CI-181	MHI-95	74.95	74.90	1	0.00	2.00	50.00	0.10	12	21.65	3.63	83.31	83.28	80.00
L-CI-182	Circular	CI-182	CI-183	75.72	75.62	1	0.00	1.50	100.00	0.10	6	15.66	3.51	83.70	83.60	80.72
L-MHI-97	Circular	CI-183	MHI-97	75.12	75.04	1	0.00	2.00	42.00	0.19	16	22.28	4.89	83.60	83.51	79.50
L-CI-183	Circular	CI-184	CI-183	75.79	75.62	1	0.00	1.50	150.00	0.11	9	16.58	4.80	84.39	83.60	80.38
L-MHI-96	Circular	CI-185	MHI-96	73.98	73.34	1	0.00	3.00	401.00	0.16	32	21.97	4.55	83.28	83.16	80.11
L-CI-185	Circular	CI-186	CI-185	74.12	73.98	1	0.00	3.00	104.00	0.13	30	22.19	4.27	83.29	83.28	80.11
Link264	Circular	CI-187	CI-186	75.77	75.62	1	0.00	1.50	150.00	0.10	13	22.63	7.47	83.27	83.29	80.51
L-CI-188	Circular	CI-188	MHI-98	75.07	74.99	1	0.00	1.50	65.00	0.12	8	20.67	4.30	82.69	82.69	80.35
L-CI-189	Circular	CI-189	CI-190	74.61	74.53	1	0.00	2.00	149.00	0.05	14	21.61	4.46	82.64	82.64	80.70
L-CI-190	Circular	CI-190	MHI-99	74.53	74.48	1	0.00	2.00	51.00	0.10	17	21.54	5.23	82.64	82.64	80.43
L-CI-191	Circular	CI-191	MHI-101	72.18	72.19	1	0.00	4.00	45.00	-0.02	100	17.19	7.88	83.75	83.54	79.60
Link265	Circular	CI-192	MHI-103	74.23	74.17	1	0.00	1.50	62.00	0.10	12	22.42	6.90	82.66	82.66	79.00
L-CI-193	Circular	CI-193	DI-21	74.47	74.41	1	0.00	1.50	55.00	0.11	11	22.43	6.30	82.40	82.40	79.40
L-CI-194	Circular	CI-194	MHI-105	72.76	72.69	1	0.00	3.00	45.00	0.16	17	22.12	2.32	82.40	82.40	79.60
L-CI-195	Circular	CI-195	MHI-106	73.28	73.25	1	0.00	2.50	58.00	0.05	19	22.51	3.93	82.43	82.42	79.61
L-CI-196	Circular	CI-196	CI-195	73.98	73.78	1	0.00	2.00	256.00	0.08	19	22.51	6.01	82.49	82.43	78.71
L-CI-197	Circular	CI-197	MHI-110	75.76	75.71	1	0.00	1.50	48.00	0.10	5	21.65	3.05	82.38	82.38	79.86
CI2-MH2	Circular	CI-2	MH-2	71.38	71.07	1	0.00	3.00	208.00	0.15	23	18.54	4.57	79.96	79.90	76.40
CI2A-MH2	Circular	CI-2A	MH-2	74.81	74.68	1	0.00	1.50	65.90	0.20	10	18.42	5.37	79.94	79.90	77.50
CI3-4	Circular	CI-3	CI-4	72.74	71.80	1	0.00	2.00	376.00	0.25	26	15.63	8.29	82.33	79.53	79.77
CI4-MH4	Circular	CI-4	MH-4	70.80	70.52	1	0.00	3.00	172.00	0.16	33	15.63	4.74	79.53	79.30	77.80
CI4A-MH4	Circular	CI-4A	MH-4	74.91	74.83	1	0.00	1.50	15.80	0.51	10	18.53	5.61	79.33	79.30	76.50
CI5-MH5	Circular	CI-5	MH-5	72.81	72.72	1	0.00	2.00	92.00	0.10	15	19.15	4.83	79.08	79.05	76.40
CI5A-MH5	Circular	CI-5A	MH-5	75.01	74.91	1	0.00	1.50	46.60	0.21	-6	16.59	3.88	79.05	79.05	77.37
CI6-MH6	Circular	CI-6	MH-6	72.81	72.69	1	0.00	2.00	120.00	0.10	10	18.76	3.28	78.99	78.98	76.20

Table 5.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 17-19

Model: US290_SegA_Sys_BNGLHOL_Ext100-8-31-09.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
CI6A-MH6	Circular	CI-6A	MH-6	74.71	74.65	1	0.00	1.50	28.20	0.21	5	16.01	3.23	78.99	78.98	77.50
NWC-175	Circular	CNT-01	CI-175	73.34	72.38	1	0.00	4.00	489.00	0.20	104	16.13	8.14	86.35	84.06	81.83
Link274	Circular	CNT-02	CI-191	72.19	72.18	1	0.00	4.00	4.00	0.25	101	17.05	7.97	83.88	83.75	80.50
L-DI-18	Circular	DI-18	MH-42	74.33	73.97	1	0.00	2.00	140.00	0.26	-28	15.31	6.20	82.86	82.40	79.40
L-DI-19	Circular	DI-19	CI-195	74.55	74.38	1	0.00	1.50	86.00	0.20	10	15.66	5.39	82.45	82.43	80.21
L-DI-20	Circular	DI-20	CI-196	74.05	73.98	1	0.00	2.00	85.00	0.08	9	22.67	2.79	82.52	82.49	79.31
L-DI-21	Circular	DI-21	CI-194	72.91	72.76	1	0.00	3.00	102.00	0.15	17	22.41	2.37	82.40	82.40	79.39
L-DI-22	Circular	DI-22	MHI-110	73.94	73.84	1	0.00	1.50	120.00	0.08	-6	16.41	3.16	82.38	82.38	79.50
L-DI-23	Circular	DI-23	MHI-107	73.14	72.90	1	0.00	2.00	120.00	0.20	13	15.81	4.18	82.47	82.35	80.10
L-DI-24	Circular	DI-24	MHI-104	74.67	74.25	1	0.00	1.50	167.00	0.25	21	16.97	11.49	88.91	82.70	79.81
L-DI-28	Circular	DI-28	MHI-100	74.28	74.09	1	0.00	2.00	80.00	0.24	18	21.48	5.78	82.65	82.68	83.14
L-DI-31	Circular	DI-31	MHI-102	71.46	71.32	1	0.00	4.50	85.00	0.16	100	17.38	6.24	83.35	83.14	82.64
Link267	Circular	DI-34	MHI-110	71.64	71.37	1	0.00	4.00	187.00	0.14	53	22.29	4.20	82.39	82.38	82.10
L-J-177	Rectangular	JCT-177	A102	71.81	71.38	1	8.00	5.00	395.00	0.11	218	20.65	5.43	82.93	82.56	80.50
MH10-11	Circular	MH-10	MH-11	65.79	65.37	1	0.00	5.50	420.00	0.10	174	15.86	7.65	77.93	77.19	77.81
MH10-11	Circular	MH-10	MH-11	70.33	68.68	1	0.00	3.00	420.00	0.39	35	15.84	5.20	77.93	77.19	77.81
E11504_3	**Circular**	**MH-11**	**E11504.3**	**65.37**	**65.16**	**1**	**0.00**	**5.50**	**210.00**	**0.10**	**226**	**16.01**	**9.64**	**77.19**	**76.49**	**75.27**
E11504_3	**Circular**	**MH-11**	**E11504.3**	**68.68**	**68.47**	**1**	**0.00**	**3.00**	**210.00**	**0.10**	**45**	**16.01**	**6.33**	**77.19**	**76.49**	**75.27**
MH2-4	Circular	MH-2	MH-4	67.96	67.65	1	0.00	4.50	228.00	0.14	103	15.78	6.44	79.90	79.30	76.80
MH4-7	Circular	MH-4	MH-7	67.15	66.97	1	0.00	5.00	148.00	0.12	140	15.80	7.08	79.30	78.94	78.00
L-MH-42	Circular	MH-42	MH-43	71.93	71.75	1	0.00	4.00	150.00	0.12	28	22.28	2.20	82.40	82.40	82.52
L-MH-43	Circular	MH-43	DI-34	71.75	71.64	1	0.00	4.00	81.00	0.14	53	22.29	4.20	82.40	82.39	80.80
MH5-6	Circular	MH-5	MH-6	72.72	72.51	1	0.00	2.00	212.00	0.10	15	19.15	4.81	79.05	78.98	77.00
MH6-7	Circular	MH-6	MH-7	72.51	72.21	1	0.00	2.00	100.00	0.30	23	18.76	7.29	78.98	78.94	77.16
MH7-8	Circular	MH-7	MH-8	66.45	66.31	1	0.00	5.50	140.00	0.10	157	15.77	6.59	78.94	78.72	76.73
MH8-9	Circular	MH-8	MH-9	66.31	66.13	1	0.00	5.50	180.00	0.10	139	15.77	5.84	78.72	78.52	77.12
MH8-9	Circular	MH-8	MH-9	71.42	70.94	1	0.00	2.00	49.07	0.98	18	15.76	6.58	78.72	78.52	77.12
MH9-10	Circular	MH-9	MH-10	66.13	65.79	1	0.00	5.50	340.00	0.10	174	15.85	7.28	78.52	77.93	76.20
MH9-10	Circular	MH-9	MH-10	70.94	70.33	1	0.00	3.00	340.00	0.18	35	15.84	5.01	78.52	77.93	76.20
MH1-CI1	Circular	MHI-1	CI-1	72.81	72.75	1	0.00	2.00	40.00	0.15	16	16.26	5.12	80.18	80.12	77.50
L-MHI-100	Circular	MHI-100	MHI-104	73.09	72.75	1	0.00	3.00	258.00	0.13	25	20.97	3.56	82.68	82.70	80.62
L-MHI-101	Circular	MHI-101	DI-31	71.59	71.46	1	0.00	4.50	79.00	0.16	99	17.38	6.17	83.54	83.35	79.70
L-MHI-102	Circular	MHI-102	MHI-104	71.32	70.88	1	0.00	4.50	237.00	0.19	87	17.51	5.39	83.14	82.70	79.71
Link278	Circular	MHI-103	MHI-102	74.17	73.79	1	0.00	2.00	200.00	0.19	23	21.63	7.18	82.66	83.14	79.40
L-MHI-104	Rectangular	MHI-104	MHI-108	70.88	70.38	1	5.00	4.00	225.00	0.22	108	15.84	5.35	82.70	82.32	80.40
L-MHI-105	Circular	MHI-105	MH-42	72.69	72.43	1	0.00	3.00	152.00	0.17	-24	16.52	2.98	82.40	82.40	79.71
L-MHI-106	Circular	MHI-106	MH-43	73.25	73.13	1	0.00	2.50	153.00	0.08	32	22.48	6.38	82.42	82.40	79.61
L-MHI-107	Circular	MHI-107	MHI-108	70.86	70.38	1	0.00	4.00	207.00	0.23	70	21.63	5.54	82.35	82.32	80.00
L-MHI-108	Rectangular	MHI-108	MHI-109	70.38	69.92	1	7.00	5.00	372.00	0.12	152	20.40	4.31	82.32	82.15	80.00
E11504_2	**Rectangular**	**MHI-109**	**E11504.2**	**69.92**	**69.52**	**1**	**7.00**	**5.00**	**261.00**	**0.15**	**157**	**20.39**	**4.45**	**82.15**	**82.00**	**80.80**
L-MHI-110	Circular	MHI-110	MHI-107	71.37	70.86	1	0.00	4.00	340.00	0.15	71	21.63	5.64	82.38	82.35	79.29
MH3-CI3	Circular	MHI-3	CI-3	72.81	72.74	1	0.00	2.00	44.00	0.16	26	16.26	8.15	82.42	82.33	78.53
L-MHI-87	Circular	MHI-87	MHI-89	76.70	75.55	1	0.00	2.00	500.00	0.23	12	15.31	3.81	83.68	83.40	80.38
L-MHI-88	Circular	MHI-88	MHI-89	73.88	73.55	1	0.00	4.00	191.00	0.17	46	15.99	3.62	83.45	83.40	80.42
L-MHI-89	Rectangular	MHI-89	MHI-90	73.55	73.04	1	4.00	4.00	299.00	0.17	55	15.87	3.45	83.40	83.30	80.42
L-MHI-90	Rectangular	MHI-90	MHI-92	73.04	72.58	1	4.00	4.00	200.00	0.23	68	15.79	4.23	83.30	83.14	79.75
L-MHI-91	Circular	MHI-91	MHI-90	76.05	75.54	1	0.00	1.50	182.00	0.28	12	17.72	6.62	85.56	83.30	81.42
L-MHI-92	Rectangular	MHI-92	MHI-94	72.58	71.86	1	5.00	4.00	325.00	0.22	90	21.18	4.46	83.14	82.97	79.35
L-MHI-93	Circular	MHI-93	MHI-94	72.28	71.86	1	0.00	4.00	182.00	0.23	110	20.22	8.64	83.82	82.97	80.40
L-JCT-177	Rectangular	MHI-94	JCT-177	71.86	71.81	1	8.00	5.00	49.00	0.10	214	20.69	5.34	82.97	82.93	80.09
L-MHI-95	Circular	MHI-95	MHI-96	74.40	74.13	1	0.00	2.50	182.00	0.15	15	21.61	3.08	83.28	83.16	79.66
L-MHI-94	Circular	MHI-96	MHI-94	72.63	71.86	1	0.00	4.00	426.00	0.18	58	21.61	4.56	83.16	82.97	80.44
L-CI-186	Circular	MHI-97	CI-186	75.04	74.62	1	0.00	2.50	233.00	0.18	20	22.24	4.14	83.51	83.29	79.74
L-MHI-98	Circular	MHI-98	MHI-100	74.49	74.09	1	0.00	2.00	200.00	0.20	12	16.05	3.60	82.69	82.68	81.65
L-MHI-99	Circular	MHI-99	DI-28	74.48	74.28	1	0.00	2.00	84.00	0.24	18	21.48	5.80	82.64	82.65	80.68
Link277	Circular	POND-4B	CI-3	72.80	72.74	1	0.00	2.00	61.00	0.10	20	19.12	6.14	82.34	82.33	80.00

Table 6.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 20-22

Model: US290_SegA_Sys_BKHSEW43_Ext100-adjust-wat.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 20-22																
E115-01.1	**Natural**	**BRCKH01.0**	**BRCKH00.1**	**51.24**	**50.96**	**1**	**16.00**	**0.00**	**114.20**	**0.25**	**8928**	**18.66**	**11.47**	**69.66**	**69.22**	**70.01**
E115-02	Natural	BRCKH01.1	BRCKH01.0	51.27	51.24	1	16.00	0.00	307.00	0.01	8478	18.39	8.79	**70.97**	69.66	70.50
E115-03.1	Natural	BRCKH01.2	BRCKH01.1	51.39	51.27	1	16.00	0.00	151.00	0.08	8459	18.36	8.33	71.42	70.97	71.80
E115-01.3	Natural	BRCKH01.3	BRCKH01.2	51.58	51.39	1	16.00	0.00	254.70	0.07	6290	18.14	6.64	71.82	71.42	71.80
CI1-MH1	Circular	CI-1	MHI-1	65.02	64.96	1	0.00	1.50	40.00	0.15	8	16.06	4.67	70.35	70.34	68.46
CI1-MHI1	Circular	CI-1.1	MHI-1.1	58.76	58.66	1	0.00	2.00	32.00	0.31	-25	20.25	6.30	69.88	69.88	66.18
CI1-2	Circular	CI-1.2	CI-2.2	70.95	70.31	1	0.00	2.00	400.00	0.16	13	18.18	4.03	77.47	77.36	76.30
CI10-MH2	Circular	CI-10	MH-23	60.65	60.38	1	0.00	3.50	190.00	0.14	54	24.81	5.58	70.77	70.81	68.26
CI10-J11	Circular	CI-10.1	JCT-11	66.81	66.11	1	0.00	2.00	32.00	2.20	23	20.98	7.18	73.25	73.25	70.51
CI11-1	Circular	CI-11	CI-10	61.05	60.65	1	0.00	3.50	400.00	0.10	54	24.81	5.59	70.71	70.77	67.13
CI11-J12	Circular	CI-11.1	JCT-12	66.31	65.74	1	0.00	2.00	32.00	1.78	40	21.04	12.55	73.13	73.14	69.92
CI12-MH2	Circular	CI-12	MH-25	62.49	62.41	1	0.00	2.50	70.00	0.11	43	25.083	8.7	70.694	70.695	67.6
CI12-MH17	Circular	CI-12.1	MHI-17	65.61	65.57	1	0.00	2.00	44.00	0.09	19	21.03	5.97	73.07	73.07	69.60
CI12A-12	Circular	CI-12A	CI-12	62.59	62.49	1	0.00	2.00	60.00	0.17	22	25.21	6.91	70.70	70.69	67.97
CI13I-1	Circular	CI-13	CI-12	63.39	62.99	1	0.00	2.00	270.00	0.15	27	25.25	8.55	70.69	70.69	68.10
CI-13-to-CI-13o	Circular	CI-13.1	CI-131	65.61	65.53	1	0.00	1.50	26.00	0.30	-20	17.31	9.56	72.93	72.92	69.17
E11504_4	**Trapezoidal**	**CI-131**	**E11504.4**	**60.31**	**60.27**	**1**	**16.00**	**10.00**	**40.00**	**0.10**	**350**	**16.30**	**1.87**	**72.92**	**72.92**	**70.31**
CI13A-13	Circular	CI-13A	CI-13	63.45	63.39	1	0.00	2.00	60.00	0.10	17	25.40	5.50	70.69	70.69	68.64
CI14-M13	Circular	CI-14	MH-13	66.14	66.02	1	0.00	2.50	116.00	0.10	25	15.94	4.99	73.53	73.53	71.25
CI14A-13	Circular	CI-14A	MH-13	70.31	70.22	1	0.00	1.50	45.00	0.20	-3	20.80	1.97	73.53	73.53	71.81
CI15-J15	Circular	CI-15	JCT-15.1	66.81	66.71	1	0.00	2.00	20.00	0.50	28	20.84	8.71	73.39	73.38	70.50
CI15A-14	Circular	CI-15A	MH-14	68.31	68.20	1	0.00	1.50	53.40	0.20	-3	17.75	1.37	73.52	73.52	71.27
CI-16-to-MHI-1	Circular	CI-16	MHI-16	66.04	66.00	1	0.00	2.00	44.00	0.09	18	20.96	5.55	73.19	73.19	70.17
E11504_6	Circular	CI-2	J-CI-2	63.18	62.23	1	0.00	3.00	32.00	2.97	68	16.28	11.59	70.24	70.23	67.61
CI2-MHI2	Circular	CI-2.1	MHI-2.1	59.04	59.00	1	0.00	2.00	44.00	0.09	15	23.17	4.60	69.71	69.71	67.98
CI2-MH1	Circular	CI-2.2	MHI-1.2	69.81	69.72	1	0.00	2.00	44.00	0.20	27	17.61	8.46	77.36	77.00	74.83
CI2B-MH7	Circular	CI-2B	MH-7	64.96	64.56	1	0.00	1.50	123.30	0.32	12	22.58	6.94	71.32	71.44	67.83
CI2C-CI2	Circular	CI-2C	CI-2B	65.21	64.96	1	0.00	1.50	227.60	0.11	10	24.30	5.85	71.27	71.32	67.76
CI3-MH3	Circular	CI-3	MHI-3	63.81	63.77	1	0.00	1.50	40.00	0.10	-7	17.21	3.62	69.56	69.61	67.92
CI3-J1	Circular	CI-3.1	JCT-10	60.89	60.79	1	0.00	2.00	32.00	0.31	20	16.00	6.14	70.84	70.84	69.86
CI3-4	Circular	CI-3.2	CI-4.2	70.83	69.63	1	0.00	2.00	400.00	0.30	12	15.73	3.72	76.23	76.20	75.57
CI3A-3	Circular	CI-3A	CI-3	63.92	63.81	1	0.00	1.50	118.20	0.09	4	21.95	2.44	69.54	69.56	67.36
CI4-MH4	Circular	CI-4	MHI-4	63.52	63.48	1	0.00	1.50	40.00	0.10	7	16.01	4.06	69.63	69.62	69.58
CI4-MH1	Circular	CI-4.1	MHI-13	61.81	61.65	1	0.00	2.00	55.00	0.29	13	16.25	4.07	70.95	70.95	70.37
CI4-MH2	Circular	CI-4.2	MHI-2.2	69.63	69.50	1	0.00	2.00	44.00	0.30	25	15.73	8.02	76.20	75.82	74.34
CI5-J1	Circular	CI-5	JCT-14	62.07	62.01	1	0.00	2.00	32.00	0.19	11	16.17	3.57	71.07	71.07	70.04
CI5-MH4	Circular	CI-5.1	MHI-4.2	69.31	69.24	1	0.00	2.00	44.00	0.16	15	15.80	5.45	75.09	74.93	73.64
CI6-J1	Circular	CI-6	JCT-15	62.40	62.34	1	0.00	2.00	32.00	0.19	14	16.27	4.48	71.22	71.22	68.45
CI6-MH5	Circular	CI-6.1	MHI-5.1	67.31	67.17	1	0.00	2.50	200.00	0.07	16	16.75	3.22	74.76	74.47	71.38
CI7-16	Circular	CI-7	MH-16	62.70	62.64	1	0.00	2.00	32.00	0.19	87	25.32	27.21	71.42	71.42	67.17
CI7-MH3	Circular	CI-7.1	MHI-3.1	70.05	70.01	1	0.00	2.00	44.00	0.10	10	18.20	3.12	74.66	74.65	73.86
CI8-MH19	Circular	CI-8	MH-19	62.98	62.95	1	0.00	2.00	32.00	0.09	48	25.25	15.02	71.59	71.59	67.31
CI8-J7	Circular	CI-8.1	JCT-7	69.81	69.12	1	0.00	2.00	32.00	2.15	7	16.00	6.59	73.81	73.81	71.81
CI9-MHI2	Circular	CI-9	MHI-22	59.57	59.51	1	0.00	4.00	50.00	0.12	56	22.54	4.39	70.86	70.86	69.07
CI9-MH10	Circular	CI-9.1	MH-10	68.61	68.58	1	0.00	2.00	32.00	0.09	14	20.85	4.52	73.37	73.36	70.95
L-COH1	Circular	COH01	COH1	62.16	61.84	1	0.00	4.00	160.00	0.20	129	20.77	10.23	71.87	71.10	68.04
E11504_5	Circular	COH1	J-COH1	61.84	61.16	1	0.00	4.00	338.00	0.20	129	20.77	10.23	71.10	70.15	68.19
11504.3	Natural	E11504.3	E11504.4	58.48	58.33	1	0.00	0.00	200.00	0.07	2217	17.51	6.34	73.13	72.92	75.23
11504.40	Natural	E11504.4	E11504.5	58.33	58.02	1	0.00	0.00	600.00	0.05	2189	17.70	7.46	72.92	72.27	75.16
11504.5	Natural	E11504.5	E11504.6	58.02	58.01	1	0.00	0.00	42.50	0.02	2573	17.84	6.60	72.27	72.21	75.16
11504.60	Natural	E11504.6	E11504.7	58.01	57.34	1	0.00	0.00	428.00	0.16	2173	17.80	6.71	72.21	71.96	72.62
11504.7	Natural	E11504.7	E11504.8	57.34	57.23	1	0.00	0.00	63.75	0.17	2146	18.06	6.82	71.96	71.92	72.61
11504.8	Natural	E11504.8	BRCKH01.2	57.23	55.83	1	0.00	0.00	778.00	0.18	2295	20.69	6.78	71.92	71.42	73.29
Link204	Circular	J-CI-2	J-COH1	62.23	61.34	1	0.00	2.50	78.00	1.14	68	16.28	13.76	70.23	70.15	69.07
Link205	**Circular**	**J-COH1**	**E5150100**	**56.59**	**56.43**	**1**	**0.00**	**4.50**	**82.00**	**0.20**	**193**	**16.28**	**12.11**	**70.15**	**70.00**	**70.39**
J10-J9	Circular	JCT-10	JCT-9	55.79	55.48	1	0.00	7.00	280.00	0.11	209	24.79	5.41	70.84	70.83	73.00
J11-J12	Circular	JCT-11	JCT-12	63.11	62.74	1	0.00	5.00	248.00	0.15	131	15.77	6.67	73.25	73.14	70.31

Table 6.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (100-Year) - Outfalls 20-22

Model: US290_SegA_Sys_BKHSEW43_Ext100-adjust-wat.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
J12-MH17	Circular	JCT-12	MHI-17	62.74	62.39	1	0.00	5.00	248.00	0.14	135	15.79	6.87	73.14	73.07	70.53
J14-MH13	Circular	JCT-14	MHI-13	59.01	58.65	1	0.00	5.00	300.00	0.12	155	24.79	7.85	71.07	70.95	69.33
J15-J14	Circular	JCT-15	JCT-14	59.34	59.01	1	0.00	5.00	300.00	0.11	155	24.79	7.84	71.22	71.07	68.38
J15-16	Circular	JCT-15.1	MHI-16	62.64	62.34	1	0.00	5.50	300.00	0.10	170	16.34	7.14	73.38	73.19	70.92
J3-MH1	Circular	JCT-3	MHI-1.1	52.46	51.76	1	0.00	9.00	500.00	0.14	499	16.52	7.79	70.31	69.88	69.81
J7-MH9	Circular	JCT-7	MH-9	64.12	63.66	1	0.00	5.00	380.00	0.12	128	16.61	6.48	73.81	73.49	72.31
J9-MH6	Circular	JCT-9	MH-6	55.48	55.20	1	0.00	7.00	250.00	0.11	211	22.52	5.44	70.83	70.81	67.85
MH10-J11	Circular	MH-10	JCT-11	63.40	63.11	1	0.00	5.00	208.00	0.14	130	16.35	6.61	73.36	73.25	71.18
MH11-J10	Circular	MH-11	JCT-10	56.08	55.79	1	0.00	7.00	260.00	0.11	209	24.79	5.41	70.85	70.84	75.58
MH13-14	Circular	MH-13	MH-14	66.02	65.84	1	0.00	2.50	184.00	0.10	26	15.89	5.30	73.53	73.52	71.76
MH14-J15	Circular	MH-14	JCT-15.1	62.84	62.64	1	0.00	5.50	200.00	0.10	169	16.48	7.08	73.52	73.38	71.50
MH14s-MH14	Circular	MH-14s	MH-14	63.39	63.34	1	0.00	5.00	49.50	0.10	156	17.05	7.90	73.58	73.52	72.50
MH16-J15	Circular	MH-16	JCT-15	59.64	59.34	1	0.00	5.00	300.00	0.10	155	24.99	7.86	71.42	71.22	67.74
MH-18-1	Circular	MH-18	MH-16	59.79	59.64	1	0.00	5.00	190.00	0.08	90	24.71	4.53	71.59	71.42	68.18
Link207	Circular	MH-18S	MH-18S2	62.42	61.92	1	0.00	4.00	189.11	0.27	116	17.26	9.12	72.67	71.74	68.35
MH18s-18	Circular	MH-18S2	MH-18	60.84	60.79	1	0.00	4.00	49.40	0.10	96	18.16	7.57	71.74	71.59	67.90
MH-19-1	Circular	MH-19	MH-18	61.95	61.79	1	0.00	3.00	160.00	0.10	71	25.16	9.94	71.59	71.59	67.69
MH-20-1	Circular	MH-20	MH-19	62.81	62.45	1	0.00	2.50	320.00	0.11	20	16.06	4.05	71.59	71.59	70.63
MH-21-2	Circular	MH-21	MH-20	63.63	63.31	1	0.00	2.00	210.00	0.15	9	15.84	2.96	71.59	71.59	70.36
MH23-CI9	Circular	MH-23	CI-9	59.88	59.57	1	0.00	4.00	310.00	0.10	54	24.81	4.28	70.81	70.86	68.51
MH24-CI1	Circular	MH-24	CI-11	61.22	61.05	1	0.00	3.50	170.00	0.10	50	24.91	5.17	70.71	70.71	68.16
MH24s-24	Circular	MH-24S	MH-24	64.10	62.72	1	0.00	2.00	52.70	2.62	-17	16.41	5.04	70.71	70.71	67.37
MH25-2	Circular	MH-25	MH-24	62.41	62.22	1	0.00	2.50	160.00	0.12	48	24.98	9.69	70.70	70.71	68.08
MH6-J3	Circular	MH-6	JCT-3	53.20	52.46	1	0.00	9.00	570.00	0.13	493	21.53	7.70	70.81	70.31	67.71
MH7-6	Circular	MH-7	MH-6	55.59	55.20	1	0.00	7.00	230.00	0.17	372	22.14	9.61	71.44	70.81	73.00
Link208	Circular	MH-7S	MH-7S2	56.11	55.73	1	0.00	7.00	364.99	0.10	466	22.07	12.01	72.74	71.71	71.63
MH7S-7	Circular	MH-7S2	MH-7	55.73	55.59	1	0.00	7.00	98.00	0.14	373	17.06	9.61	71.71	71.44	68.24
MH8-7	Circular	MH-8	MH-7	60.91	60.59	1	0.00	2.00	160.00	0.20	7	16.25	2.16	71.44	71.44	74.04
MH8-9	Circular	MH-8.1	MH-9	67.81	67.76	1	0.00	2.00	55.00	0.09	21	20.76	6.72	73.49	73.49	72.41
MH9-10	Circular	MH-9	MH-10	63.66	63.40	1	0.00	5.00	200.00	0.13	127	16.37	6.43	73.49	73.36	71.57
MH1-2	Circular	MHI-1	MHI-2	64.46	63.82	1	0.00	2.00	200.00	0.32	23	15.96	7.48	70.34	70.26	67.58
MH1-01.0	Circular	MHI-1.1	BRCKH01.0	51.76	51.31	1	0.00	9.00	320.00	0.14	624	21.39	9.75	69.88	69.66	65.16
MH1-2.1	Circular	MHI-1.2	MHI-2.2	69.22	69.00	1	0.00	2.50	184.00	0.12	37	15.71	7.56	77.00	75.82	76.25
MH12-11	Circular	MHI-12	MH-11	56.29	56.08	1	0.00	7.00	190.00	0.11	209	24.79	5.41	70.86	70.85	74.31
MH12s-12	Circular	MHI-12S	MHI-12	60.41	60.29	1	0.00	3.00	62.10	0.19	28	16.00	3.94	70.86	70.86	70.70
MHI13-12	Circular	MHI-13	MHI-12	58.15	57.79	1	0.00	5.50	360.00	0.10	155	24.79	6.50	70.95	70.86	70.10
MH16-17	Circular	MHI-16	MHI-17	62.34	62.11	1	0.00	5.50	188.00	0.12	192	16.31	8.05	73.19	73.07	70.97
MH17-18	Circular	MHI-17	MHI-18	60.84	60.49	1	0.00	6.50	196.00	0.18	344	16.31	10.33	73.07	72.96	70.40
MH18o	Circular	MHI-18	CI-131	60.49	60.31	1	0.00	6.50	100.00	0.18	344	16.31	10.33	72.96	72.92	70.85
MH2-CI2	Circular	MHI-2	CI-2	63.32	63.18	1	0.00	2.50	40.00	0.35	51	16.28	10.34	70.26	70.24	67.74
MHI2-I1	Circular	MHI-2.1	MHI-1.1	58.50	58.26	1	0.00	2.50	200.00	0.12	-26	17.23	4.47	69.71	69.88	66.12
MH2-3	Circular	MHI-2.2	MHI-3.1	67.50	66.85	1	0.00	4.00	500.00	0.13	72	16.52	5.70	75.82	74.65	77.24
MH22-12	Circular	MHI-22	MHI-12	59.01	58.79	1	0.00	4.50	200.00	0.11	56	22.54	3.47	70.86	70.86	70.99
MH3-01.0	Circular	MHI-3	BRCKH01.0	62.72	62.31	1	0.00	2.00	180.00	0.23	17	16.64	5.39	69.61	69.66	68.00
MH3-6	Circular	MHI-3.1	MHI-6	66.65	66.36	1	0.00	4.00	196.00	0.15	79	16.07	6.26	74.65	74.13	74.10
Link191	Circular	MHI-4	MHI-3	62.98	62.72	1	0.00	2.00	200.00	0.13	10	15.49	3.29	69.62	69.61	67.05
MHI4-J3	Circular	MHI-4.1	JCT-3	59.00	58.96	1	0.00	2.50	20.00	0.20	38	16.25	7.51	70.31	70.31	71.98
MH4-5	Circular	MHI-4.2	MHI-5.1	67.69	67.31	1	0.00	2.50	272.00	0.14	21	15.80	4.38	74.93	74.47	74.44
MHI5-4	Circular	MHI-5	MHI-4.1	59.90	59.50	1	0.00	2.00	200.00	0.20	19	16.26	5.97	70.54	70.31	73.20
MH5-6	Circular	MHI-5.1	MHI-6	66.17	65.93	1	0.00	3.50	200.00	0.12	44	16.59	4.58	74.47	74.13	74.00
MH6-J7	Circular	MHI-6	JCT-7	64.36	64.12	1	0.00	5.00	204.00	0.12	129	16.58	6.53	74.13	73.81	72.21
W43-14	Circular	W43RD	MH-14s	63.74	63.39	1	0.00	5.00	174.00	0.20	157	17.05	7.93	73.82	73.58	72.57

Table 1.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (10-Year) - Outfalls 1-4

Model: 10YR_SegE_Existing.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 1-4																
A10-to-A12	Rectangular	A10	A12	133.40	133.25	1.00	5.00	2.00	300.00	0.05	21	15.80	2.34	135.31	135.18	136.67
A11-AM35	Circular	A11	A-M35	125.83	125.78	1.00	0.00	1.50	15.00	0.33	-6	16.05	1.67	129.67	129.75	131.00
OF A11	Trapezoidal	A11	B-F23	129.50	128.30	1.00	32.00	0.50	343.00	0.35	8	16.11	1.59	129.67	128.43	131.00
A12-to-A14	Rectangular	A12	A14	133.25	133.08	1.00	5.00	2.00	350.00	0.05	23	15.80	2.51	135.18	135.00	136.67
A14-to-A16	Rectangular	A14	A16	133.08	133.00	1.00	5.00	2.00	150.00	0.05	25	15.82	2.73	135.00	134.90	136.29
A16-AF4	Natural	A16	A-F4	133.00	131.41	1.00	10.00	3.50	612.00	0.26	25	15.97	1.66	134.90	134.07	137.00
A2-to-A4	Rectangular	A2	A4	133.84	133.77	1.00	4.00	2.00	150.00	0.05	4	15.76	0.70	135.45	135.44	137.59
A4-to-A6	Rectangular	A4	A6	133.77	133.62	1.00	4.00	2.00	300.00	0.05	11	15.77	1.64	135.44	135.40	137.14
A6-to-A8	Rectangular	A6	A8	133.62	133.48	1.00	5.00	2.00	275.00	0.05	18	15.79	2.07	135.40	135.35	136.97
A8-to-A10	Rectangular	A8	A10	133.48	133.40	1.00	5.00	2.00	125.00	0.06	19	15.79	2.21	135.35	135.31	137.05
AF10-AF12	Natural	A-F10	A-F12	130.80	130.40	1.00	10.00	3.50	220.00	0.18	31	16.09	1.49	133.40	133.24	134.30
AF12-AF14	Circular	A-F12	A-F14	130.40	130.38	2.00	0.00	2.50	52.00	0.04	32	16.09	3.13	133.24	133.18	134.20
AF14-AF16	Natural	A-F14	A-F16	130.38	130.48	1.00	0.00	3.00	348.00	-0.03	31	16.16	0.94	133.18	132.99	134.00
AF16-AF18	Circular	A-F16	A-F18	130.48	130.74	2.00	0.00	2.50	68.00	-0.38	32	16.22	3.26	132.99	132.90	134.40
AF18-AF20	Natural	A-F18	A-F20	130.74	130.67	1.00	10.00	2.75	216.00	0.03	31	16.22	1.87	132.90	132.45	134.00
AF20-AF22	Circular	A-F20	A-F22	130.67	129.64	2.00	0.00	2.50	64.00	1.61	32	16.20	5.23	132.45	132.51	133.50
AF22-AF24	Natural	A-F22	A-F24	129.64	129.26	1.00	10.00	3.00	597.00	0.06	30	16.36	0.83	132.51	132.39	134.00
AF24-AF26	Circular	A-F24	A-F26	129.26	129.87	2.00	0.00	2.50	41.00	-1.49	30	16.46	3.09	132.39	132.33	133.30
AF26-AF28	Natural	A-F26	A-F28	129.87	129.18	1.00	10.00	3.80	736.00	0.09	30	16.51	1.59	132.33	131.31	134.50
AF28-AF30	Circular	A-F28	A-F30	129.18	129.05	2.00	0.00	2.50	68.00	0.19	32	16.54	3.56	131.31	131.22	133.00
AF30-AF32	Natural	A-F30	A-F32	129.05	128.00	1.00	10.00	3.00	525.00	0.20	32	16.57	1.94	131.22	130.17	132.50
AF32-AF34	Circular	A-F32	A-F34	128.00	127.75	2.00	0.00	2.50	71.00	0.35	33	16.59	3.63	130.17	130.08	132.10
AF34-AOUT	Natural	A-F34	A-OUT	127.75	126.90	1.00	10.00	4.00	520.00	0.16	33	16.62	1.93	130.08	129.23	132.00
AF35-AM31	Circular	A-F35	A-M31	125.60	125.35	1.00	0.00	1.50	83.00	0.30	3	15.76	3.20	130.29	130.16	131.00
AF36-AOUT	Natural	A-F36	A-OUT	127.52	127.40	1.00	10.00	2.50	585.00	0.02	12	16.79	1.04	129.41	129.23	130.02
AF38-AF36	Natural	A-F38	A-F36	127.84	127.52	1.00	10.00	2.50	774.00	0.04	8	16.72	0.63	129.49	129.41	130.34
AF4-AF6	Circular	A-F4	A-F6	131.41	131.78	2.00	0.00	2.50	55.00	-0.67	31	16.01	3.09	134.07	134.00	135.41
AF4-AF6	Natural	A-F4	A-F6	134.91	134.75	1.00	0.00	0.50	33.00	0.48	0	0.00	0.00	134.00	134.00	135.41
AF40-AF38	Natural	A-F40	A-F38	128.33	127.84	1.00	10.00	1.50	484.00	0.10	4	15.77	0.63	129.52	129.49	130.00
AF6-AF8	Natural	A-F6	A-F8	131.78	131.00	1.00	10.00	2.20	362.00	0.22	30	16.05	1.77	134.00	133.44	135.25
AF8-AF10	Circular	A-F8	A-F10	131.00	130.80	2.00	0.00	2.50	40.00	0.50	32	16.06	3.25	133.44	133.40	134.30
AM11-AM13	Natural	A-M11	A-M13	135.50	134.67	1.00	10.00	0.50	275.00	0.30	0	15.97	0.02	135.55	135.54	136.00
AM12-AM14	Natural	A-M12	A-M14	131.58	131.50	1.00	10.00	3.40	658.00	0.01	63	16.06	1.31	133.78	133.60	135.05
AM13-AM15	Natural	A-M13	A-M15	134.67	133.72	1.00	10.00	1.50	478.00	0.20	9	16.08	0.99	135.54	134.80	136.17
AM14-AM16	Natural	A-M14	A-M16	131.50	128.53	1.00	10.00	3.00	747.00	0.40	59	15.94	1.94	133.60	133.37	134.90
AM15-AM17	Natural	A-M15	A-M17	133.72	133.06	1.00	10.00	1.50	507.00	0.13	16	16.15	0.95	134.80	134.24	135.42
OF A-M16	Trapezoidal	A-M16	A-F26	134.00	134.00	1.00	100.00	0.50	36.00	0.00	0	0.00	0.00	132.33	132.33	134.50
AM16-AM18	Rectangular	A-M16	A-M18	128.51	127.94	1.00	6.00	3.00	598.00	0.10	91	16.91	5.03	133.37	132.35	134.50
AM16-AM18	Natural	A-M16	A-M18	133.00	132.65	1.00	0.00	1.00	598.00	0.06	1	16.47	0.32	133.37	132.81	134.50
AM17-AM19	Natural	A-M17	A-M19	133.06	131.84	1.00	10.00	1.50	619.00	0.20	22	16.13	1.31	134.24	133.61	134.97
AM18-AM20	Rectangular	A-M18	A-M20	127.94	127.33	1.00	6.00	3.00	626.00	0.10	94	16.63	5.19	132.35	131.14	134.00
AM19-AM16	Circular	A-M19	A-M16	128.84	128.51	1.00	0.00	3.00	165.00	0.20	33	15.98	4.74	133.61	133.37	135.00
AM2-AM4	Trapezoidal	A-M2	A-M4	136.35	135.76	1.00	0.00	1.00	352.00	0.17	4	15.78	1.88	137.22	136.91	137.50
AM20-AM24	Rectangular	A-M20	A-M24	127.33	127.06	1.00	6.00	3.00	300.00	0.09	98	16.54	5.83	131.14	130.55	132.65
AM21-AM19	Natural	A-M21	A-M19	134.00	131.84	1.00	10.00	1.50	446.00	0.48	0	0.00	0.00	134.00	133.61	135.50
AM23-AM25	Natural	A-M23	A-M25	134.15	133.02	1.00	10.00	1.00	525.00	0.22	0	0.00	0.00	134.15	133.81	135.15
AM24-AM36	Rectangular	A-M24	A-M36	127.06	123.00	1.00	6.00	3.00	365.00	1.11	98	16.54	6.66	130.55	129.72	133.25
AM25-AM27	Natural	A-M25	A-M27	133.02	130.20	1.00	10.00	2.00	645.00	0.44	11	16.07	1.33	133.81	130.71	135.02
AM26-AM38	Rectangular	A-M26	A-M38	122.70	122.67	1.00	5.00	5.00	24.00	0.13	79	15.76	3.18	129.68	129.64	132.10
AM27-AM37	Circular	A-M27	A-M37	124.30	124.15	1.00	0.00	3.00	79.00	0.19	22	16.01	3.32	129.83	129.76	133.73
AM28-AM26	Circular	A-M28	A-M26	123.85	123.15	1.00	0.00	4.00	477.00	0.15	41	15.76	3.40	129.84	129.68	131.90
AM3-AM5	Natural	A-M3	A-M5	138.35	134.75	1.00	10.00	3.50	503.00	0.72	14	15.82	2.06	139.33	136.10	141.85
AM30-AM28	Circular	A-M30	A-M28	124.55	123.85	1.00	0.00	3.50	483.00	0.14	29	15.75	3.14	130.11	129.84	131.78
AM31-AM41	Circular	A-M31	A-M41	124.85	124.69	1.00	0.00	3.00	96.00	0.17	11	15.75	2.91	130.16	130.16	131.00
AM32-AM30	Circular	A-M32	A-M30	125.40	124.55	1.00	0.00	2.00	564.00	0.15	10	15.69	3.05	130.09	130.11	131.50

Table 1.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (10-Year) - Outfalls 1-4

Model: 10YR_SegE_Existing.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
AM33-AM31	Circular	A-M33	A-M31	125.60	125.35	1.00	0.00	1.50	220.00	0.11	5	16.61	2.55	130.18	130.16	131.00
OF AM33	Trapezoidal	A-M33	A11	130.00	129.60	1.00	12.00	0.50	366.00	0.11	2	16.08	0.88	130.18	129.69	131.00
AM35-AM32	Circular	A-M35	A-M32	125.78	125.40	1.00	0.00	1.50	187.00	0.20	-5	16.06	2.30	129.75	130.09	138.03
AM36-AM38	Rectangular	A-M36	A-M38	123.00	122.67	1.00	6.00	3.00	30.00	1.10	98	16.47	5.43	129.74	129.64	132.15
AM37-AM26	Circular	A-M37	A-M26	124.15	124.01	1.00	0.00	3.00	80.00	0.18	28	15.92	4.18	129.76	129.68	134.40
AM38-AOUT	Rectangular	A-M38	A-OUT	122.67	122.62	1.00	5.00	5.00	47.00	0.11	165	16.00	6.61	129.64	129.23	132.10
AM39-AM28	Circular	A-M39	A-M28	126.15	125.85	1.00	0.00	2.00	86.00	0.35	5	15.77	3.48	129.86	129.84	135.45
AM4-AM6	Natural	A-M4	A-M6	135.76	133.35	1.00	10.00	3.40	997.00	0.24	14	15.92	1.22	136.91	135.44	139.16
AM41-AM30	Circular	A-M41	A-M30	124.69	124.55	1.00	0.00	3.00	88.00	0.16	16	15.83	2.76	130.16	130.11	137.31
AM5-AM7	Natural	A-M5	A-M7	134.75	133.45	1.00	10.00	3.50	306.00	0.42	15	15.87	1.59	136.10	135.61	138.30
AM5-AM5B	Circular	A-M5	A-M5B	134.60	134.60	2.00	0.00	2.50	62.00	0.00	5	15.95	0.89	136.10	136.09	138.30
AM6-AM8	Natural	A-M6	A-M8	133.35	132.55	1.00	10.00	4.00	221.00	0.36	51	16.06	2.39	135.44	134.79	137.35
AM7-AM6	Circular	A-M7	A-M6	133.45	133.35	2.00	0.00	2.50	172.00	0.06	27	16.03	2.96	135.61	135.44	137.30
AM8-AM12	Rectangular	A-M8	A-M12	132.55	131.58	1.00	6.00	3.00	1065.00	0.09	56	16.08	4.20	134.79	133.78	136.57
AM9-AM7	Natural	A-M9	A-M7	137.00	133.45	1.00	10.00	3.50	500.00	0.71	0	0.00	0.00	136.00	135.61	140.50
E100	**Natural**	**A-OUT**	**E100-OUT**	**122.62**	**122.07**	**1.00**	**0.00**	**0.00**	**1206.00**	**0.05**	**198**	**16.24**	**2.36**	**129.23**	**127.22**	**146.49**
B10-to-B12	Circular	B10	B12	121.71	120.94	1.00	0.00	2.50	135.00	0.57	4	15.82	3.12	124.51	124.50	126.94
B10-to-B12	Trapezoidal	B10	B12	126.44	125.94	1.00	36.00	0.25	135.00	0.37	0	0.00	0.00	124.50	124.50	126.94
B12-to-B14	Circular	B12	B14	120.44	120.32	1.00	0.00	3.00	80.00	0.15	5	15.82	1.09	124.50	124.50	126.44
B12-to-B14	Trapezoidal	B12	B14	125.94	126.25	1.00	36.00	0.50	80.00	-0.39	0	0.00	0.00	124.50	124.50	126.44
B14-to-B16	Circular	B14	B16	120.32	120.11	1.00	0.00	3.00	140.00	0.15	6	15.82	0.79	124.50	124.51	126.75
B16-to-B18	Circular	B16	B18	120.11	119.94	1.00	0.00	3.00	110.00	0.15	8	15.82	1.02	124.51	124.51	126.78
B16-to-B18	Trapezoidal	B16	B18	126.28	125.90	1.00	36.00	0.25	110.00	0.35	0	0.00	0.00	124.51	124.51	126.78
B18-to-B20	Circular	B18	B20	119.94	119.56	1.00	0.00	3.00	255.00	0.15	10	15.81	1.37	124.51	124.49	126.40
B2-BM6	Circular	B2	B-M6	123.10	122.69	1.00	0.00	2.00	60.00	0.68	4	15.83	4.54	126.11	126.10	128.10
B20-to-B22	Circular	B20	B22	119.06	118.86	1.00	0.00	3.50	135.00	0.15	12	15.81	1.64	124.49	124.48	126.28
B20-to-B22	Trapezoidal	B20	B22	125.78	125.24	1.00	36.00	0.25	135.00	0.40	0	0.00	0.00	124.48	124.48	126.28
B22-to-B24	Circular	B22	B24	118.86	118.66	1.00	0.00	3.50	130.00	0.15	14	15.80	1.62	124.48	124.48	126.00
B22-to-B24	Trapezoidal	B22	B24	125.24	124.72	1.00	36.00	0.25	130.00	0.40	0	0.00	0.00	124.48	124.48	126.00
B24-to-B26	Circular	B24	B26	118.16	118.06	1.00	0.00	4.00	95.00	0.11	16	15.81	1.31	124.48	124.48	125.70
B24-to-B26	Trapezoidal	B24	B26	124.72	125.10	1.00	36.00	0.25	95.00	-0.40	0	0.00	0.00	124.48	124.48	125.70
B26-to-B28	Circular	B26	B28	118.06	117.83	1.00	0.00	4.00	230.00	0.10	21	15.80	1.69	124.48	124.49	125.60
B28-to-B30	Circular	B28	B30	117.83	117.76	1.00	0.00	4.00	75.00	0.09	23	15.80	1.80	124.49	124.49	125.77
B28-to-B30	Trapezoidal	B28	B30	125.27	125.00	1.00	36.00	0.25	75.00	0.36	0	0.00	0.00	124.49	124.49	125.77
B30-to-B32	Circular	B30	B32	117.76	117.62	1.00	0.00	4.00	135.00	0.10	26	15.80	2.04	124.49	124.49	125.50
B30-to-B32	Trapezoidal	B30	B32	125.00	125.58	1.00	36.00	0.25	135.00	-0.43	0	0.00	0.00	124.49	124.49	125.50
B32-to-B34	Circular	B32	B34	117.62	117.40	1.00	0.00	4.00	75.00	0.29	30	15.80	2.41	124.49	124.52	126.50
B34-BM42	Circular	B34	B-M42	117.40	117.27	1.00	0.00	4.00	75.00	0.17	30	15.81	2.38	124.52	124.66	127.00
OF B34	Trapezoidal	B34	B-OUT	126.40	125.00	1.00	30.00	0.50	100.00	1.40	0	0.00	0.00	124.24	124.24	127.00
B36-BM42	Circular	B36	B-M42	118.53	118.34	1.00	0.00	2.50	46.00	0.41	15	15.81	4.47	124.52	124.66	127.50
OF B36	Trapezoidal	B36	B-OUT	127.00	125.00	1.00	70.00	0.50	50.00	4.00	0	0.00	0.00	124.24	124.24	127.50
B38-to-B36	Circular	B38	B36	118.61	118.53	1.00	0.00	2.50	75.00	0.11	15	15.80	3.63	124.55	124.52	127.50
B4-to-B6	Circular	B4	B6	123.21	122.27	1.00	0.00	1.50	135.00	0.70	1	15.76	2.79	124.54	124.53	128.52
B4-to-B6	Trapezoidal	B4	B6	128.02	127.49	1.00	36.00	0.50	135.00	0.39	0	0.00	0.00	124.53	124.53	128.52
B40-to-B38	Circular	B40	B38	121.03	120.74	1.00	0.00	1.50	144.00	0.20	1	15.80	1.18	124.53	124.55	128.00
B42-BM16	Circular	B42	B-M16	122.14	121.96	1.00	0.00	1.50	59.00	0.31	6	15.75	4.23	125.28	125.23	127.00
B44-BM54	Circular	B44	B-M54	121.96	121.92	1.00	0.00	1.50	14.00	0.29	5	15.75	2.51	125.53	125.51	125.84
B6-to-B8	Circular	B6	B8	122.27	121.98	1.00	0.00	2.00	135.00	0.21	2	15.84	2.12	124.53	124.53	127.99
B6-to-B8	Trapezoidal	B6	B8	127.49	126.97	1.00	36.00	0.25	135.00	0.39	0	0.00	0.00	124.53	124.53	127.99
B8-to-B10	Circular	B8	B10	121.98	121.71	1.00	0.00	2.00	135.00	0.20	3	15.92	2.47	124.53	124.51	127.47
B8-to-B10	Trapezoidal	B8	B10	126.97	126.44	1.00	36.00	0.25	135.00	0.39	0	0.00	0.00	124.51	124.51	127.47
BF1-BF27	Circular	B-F1	B-F27	122.84	122.64	1.00	0.00	2.50	66.00	0.30	10	15.71	4.74	126.35	126.34	129.50
BF11-BM38	Rectangular	B-F11	B-M38	117.29	117.05	2.00	7.00	5.00	120.00	0.20	169	15.80	2.41	124.49	124.98	126.00
BF13-BF71	Rectangular	B-F13	B-F71	118.53	118.38	1.00	4.00	4.00	171.00	0.09	92	15.63	5.84	124.90	124.61	126.00
BF15-BF13	Rectangular	B-F15	B-F13	118.68	118.53	1.00	4.00	4.00	300.00	0.05	72	15.63	4.51	125.22	124.90	126.90
BF17-BF15	Rectangular	B-F17	B-F15	118.83	118.68	1.00	4.00	4.00	300.00	0.05	81	15.53	5.07	125.61	125.22	126.50
BF19-BF73	Rectangular	B-F19	B-F73	119.06	118.98	1.00	4.00	4.00	150.00	0.05	50	16.48	3.11	125.63	125.61	126.50
BF2-B38	Circular	B-F2	B38	118.66	118.61	1.00	0.00	2.50	10.00	0.50	12	15.82	3.52	124.58	124.55	126.00
BF20-BF22	Circular	B-F20	B-F22	124.72	124.58	1.00	0.00	1.50	66.00	0.21	-3	16.07	2.10	126.43	126.42	130.50
OF BF20	Trapezoidal	B-F20	A-F38	129.50	129.00	1.00	24.00	0.50	560.00	0.09	0	0.00	0.00	129.49	129.49	130.50

Table 1.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (10-Year) - Outfalls 1-4

Model: 10YR_SegE_Existing.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
BF21-BF25	Circular	B-F21	B-F25	123.00	122.88	1.00	0.00	2.50	80.00	0.15	25	16.79	5.24	126.46	126.42	130.00
BF22-BF25	Circular	B-F22	B-F25	124.58	124.38	1.00	0.00	1.50	96.00	0.21	-3	16.06	2.10	126.42	126.42	130.00
BF23-BF25	Circular	B-F23	B-F25	124.65	124.38	1.00	0.00	1.50	86.00	0.31	11	16.11	5.98	127.02	126.42	130.00
OF BF23	Circular	B-F23	B-F21	0.05	0.00	1.00	0.00	0.05	10.00	0.50	0	0.00	0.00	##########	##########	130.00
OF BF23	Circular	B-F23	B-F21	0.05	0.00	1.00	0.00	0.05	10.00	0.50	0	0.00	0.00	##########	##########	130.00
BF25-BF27	Circular	B-F25	B-F27	122.88	122.64	1.00	0.00	3.00	152.00	0.16	28	16.77	5.13	126.42	126.34	130.50
BF27-BF29	Circular	B-F27	B-F29	121.64	121.46	1.00	0.00	4.00	101.00	0.18	31	16.75	4.15	126.34	126.32	130.29
BF29-BF31	Circular	B-F29	B-F31	121.46	121.25	1.00	0.00	4.00	146.00	0.14	32	16.75	3.98	126.32	126.29	145.50
BF3-BF5	Natural	B-F3	B-F5	127.88	126.60	1.00	10.00	1.00	655.00	0.20	15	15.77	0.99	128.85	127.86	129.50
BF31-BM1	Circular	B-F31	B-M1	121.25	120.80	1.00	0.00	4.00	303.00	0.15	32	16.75	3.79	126.29	126.23	143.40
BF33-BF77	Circular	B-F33	B-F77	119.34	119.25	1.00	0.00	3.00	95.00	0.09	62	17.34	8.65	126.11	126.00	125.54
BF35-BF33	Circular	B-F35	B-F33	119.47	119.34	1.00	0.00	3.00	125.00	0.10	42	17.34	5.94	126.24	126.11	125.09
BF37-BF35	Circular	B-F37	B-F35	119.57	119.47	1.00	0.00	3.00	100.00	0.10	35	17.19	4.93	126.31	126.24	125.71
BF39-BF37	Circular	B-F39	B-F37	119.77	119.57	1.00	0.00	2.50	200.00	0.10	28	17.36	5.71	126.57	126.31	125.14
BF4-BF2	Natural	B-F4	B-F2	124.50	124.15	1.00	0.00	1.50	768.00	0.05	4	15.83	0.72	125.57	124.67	126.00
BF41-BF39	Circular	B-F41	B-F39	122.44	120.77	1.00	0.00	1.50	10.00	16.70	7	17.36	13.38	126.57	126.57	131.45
BF43-BF39	Circular	B-F43	B-F39	119.82	119.77	1.00	0.00	2.50	50.00	0.10	21	15.50	4.27	126.61	126.57	125.50
BF45-BF41	Circular	B-F45	B-F41	129.04	128.69	1.00	0.00	1.50	100.00	0.35	2	15.76	3.13	129.63	129.22	136.32
BF47-BF43	Circular	B-F47	B-F43	122.04	120.32	1.00	0.00	1.50	141.00	1.22	5	17.36	4.71	126.63	126.61	133.77
BF49-BF47	Circular	B-F49	B-F47	129.84	129.74	1.00	0.00	1.50	100.00	0.10	2	15.76	2.48	130.54	130.27	138.91
BF5-BF7	Natural	B-F5	B-F7	126.60	125.48	1.00	10.00	2.00	595.00	0.19	28	15.89	1.17	127.86	127.07	128.60
BF51-BF43	Circular	B-F51	B-F43	119.91	119.82	1.00	0.00	2.50	90.00	0.10	20	15.43	4.06	126.69	126.61	126.00
BF53-BF51	Circular	B-F53	B-F51	120.12	119.91	1.00	0.00	2.50	210.00	0.10	15	15.77	3.00	126.78	126.69	125.80
BF55-BF53	Circular	B-F55	B-F53	120.24	120.12	1.00	0.00	2.00	120.00	0.10	12	15.39	3.69	126.75	126.78	125.50
Link444	Circular	B-F55	Node457	0.05	0.00	1.00	0.00	0.05	10.00	0.50	16	16.03	0.00	##########	##########	125.50
BF57-BF55	Circular	B-F57	B-F55	120.34	120.24	1.00	0.00	2.00	101.00	0.10	7	17.37	2.39	126.77	126.75	127.90
BF59-BF57	Circular	B-F59	B-F57	120.51	120.34	1.00	0.00	2.00	165.00	0.10	7	17.37	2.35	126.80	126.77	128.00
BF61-BF59	Circular	B-F61	B-F59	120.62	120.51	1.00	0.00	2.00	105.00	0.10	7	17.37	2.34	126.79	126.80	128.50
BF63-BF61	Natural	B-F63	Node458	123.30	123.26	1.00	5.00	5.10	40.00	0.10	4	15.34	2.15	126.11	126.11	128.91
BF63-BF65	Circular	B-F63	B-F65	123.30	123.00	3.00	0.00	2.50	90.00	0.33	102	15.93	6.66	126.11	125.50	128.91
BF63-BF65	Trapezoidal	B-F63	B-F65	128.41	128.41	1.00	100.00	0.50	92.00	0.00	0	0.00	0.00	125.50	125.50	128.91
BF67-BF11	Rectangular	B-F67	B-F11	117.35	117.29	2.00	7.00	5.00	20.00	0.30	122	16.21	1.74	124.95	124.49	125.10
BF7-BF9	Natural	B-F7	B-F9	125.48	124.22	1.00	10.00	2.50	607.00	0.21	46	15.89	1.61	127.07	125.93	128.00
BF71-BF67	Rectangular	B-F71	B-F67	118.38	117.35	1.00	5.00	5.00	195.00	0.53	88	16.48	4.45	124.61	124.95	126.00
BF73-BF17	Rectangular	B-F73	B-F17	118.98	118.83	1.00	4.00	4.00	300.00	0.05	53	15.55	3.30	125.61	125.61	126.50
BF75-BF19	Rectangular	B-F75	B-F19	119.13	119.06	1.00	4.00	4.00	150.00	0.05	46	17.34	2.87	125.65	125.63	126.50
BF77-BF81	Circular	B-F77	B-F81	119.25	119.22	1.00	0.00	2.00	25.00	0.12	47	17.34	14.70	126.00	125.68	127.00
BF79-BF75	Rectangular	B-F79	B-F75	119.16	119.13	1.00	4.00	4.00	50.00	0.06	46	17.34	2.88	125.66	125.65	126.50
BF81-BF79	Rectangular	B-F81	B-F79	119.22	119.16	1.00	4.00	4.00	110.00	0.05	46	17.34	2.89	125.68	125.66	126.50
BF9-BF11	Natural	B-F9	B-F11	124.22	122.83	1.00	10.00	2.50	479.00	0.29	65	16.03	2.03	125.93	124.49	127.00
BM1-BM4	Circular	B-M1	B-M4	120.80	120.48	1.00	0.00	4.00	210.00	0.15	37	16.75	4.99	126.23	126.16	132.08
BM10-B26	Circular	B-M10	B26	120.85	120.58	1.00	0.00	1.50	32.00	0.84	4	15.80	3.14	124.52	124.48	126.19
BM11-BM18	Circular	B-M11	B-M18	123.23	121.61	1.00	0.00	1.50	204.00	0.79	6	16.00	4.40	126.06	125.46	127.50
OF BM11	Trapezoidal	B-M11	B-F73	127.00	125.50	1.00	50.00	0.50	50.00	3.00	0	0.00	0.00	126.04	125.61	127.50
BM12-B30	Circular	B-M12	B30	120.40	120.26	1.00	0.00	1.50	38.00	0.37	4	15.80	3.25	124.56	124.49	126.76
BM14-BM50	Circular	B-M14	B-M50	120.74	119.80	1.00	0.00	2.50	310.00	0.30	15	16.10	3.54	125.14	124.83	128.03
BM16-BM14	Circular	B-M16	B-M14	120.96	120.74	1.00	0.00	2.50	86.00	0.26	19	15.85	4.15	125.23	125.14	127.45
BM18-BM16	Circular	B-M18	B-M16	121.61	120.96	1.00	0.00	2.50	422.00	0.15	12	15.90	2.88	125.46	125.23	133.87
BM2-BM4	Circular	B-M2	B-M4	123.59	122.98	1.00	0.00	1.50	270.00	0.23	9	16.00	4.79	127.50	126.16	135.23
BM20-BM26	Circular	B-M20	B-M26	122.31	121.95	1.00	0.00	2.00	119.00	0.30	8	16.01	2.65	126.12	126.02	134.54
BM22-BM30	Circular	B-M22	B-M30	120.51	120.34	1.00	0.00	2.50	83.00	0.20	13	16.01	2.71	125.59	125.52	131.23
BM24-BM34	Circular	B-M24	B-M34	119.72	119.52	1.00	0.00	2.00	92.00	0.22	10	16.01	3.17	124.78	124.70	129.63
BM26-BM28	Circular	B-M26	B-M28	119.44	118.96	1.00	0.00	4.50	412.00	0.12	47	16.35	3.12	126.02	125.80	128.00
BM28-BM30	Circular	B-M28	B-M30	118.96	118.34	1.00	0.00	4.50	510.00	0.12	47	16.38	2.96	125.80	125.52	129.30
BM3-BM1	Circular	B-M3	B-M1	124.00	123.80	1.00	0.00	2.00	90.00	0.22	9	15.76	4.40	126.26	126.23	130.00
BM30-BM32	Circular	B-M30	B-M32	118.34	117.73	1.00	0.00	4.50	508.00	0.12	57	16.24	3.57	125.52	125.11	127.34
BM32-BM34	Circular	B-M32	B-M34	117.73	117.02	1.00	0.00	4.50	596.00	0.12	57	16.23	3.57	125.11	124.69	128.70
BM34-BM36	Circular	B-M34	B-M36	117.02	116.85	1.00	0.00	4.50	145.00	0.12	65	16.23	4.09	124.70	124.91	127.20
BM36-BM40	Rectangular	B-M36	B-M40	116.85	116.79	2.00	7.00	5.00	18.00	0.33	310	15.80	4.43	124.91	124.90	127.90
BM38-BM36	Rectangular	B-M38	B-M36	117.05	116.85	2.00	7.00	5.00	105.00	0.19	190	15.80	2.71	124.97	124.91	130.07

Table 1.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (10-Year) - Outfalls 1-4

Model: 10YR_SegE_Existing.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
BM4-BM6	Circular	B-M4	B-M6	119.98	119.69	1.00	0.00	4.50	191.00	0.15	40	16.71	3.78	126.16	126.10	132.87
BM40-BM42	Rectangular	B-M40	B-M42	116.79	116.75	2.00	7.00	5.00	28.00	0.14	269	16.27	3.83	124.90	124.66	126.90
BM42-BOUT	Rectangular	B-M42	B-OUT	116.75	116.66	2.00	7.00	5.00	45.00	0.20	315	16.14	4.49	124.66	124.24	127.18
BM43-BM44	Circular	B-M43	B-M44	122.38	122.22	1.00	0.00	1.50	78.00	0.21	0	15.84	0.98	125.53	125.53	127.50
BM44-BM56	Circular	B-M44	B-M56	122.22	122.07	1.00	0.00	1.50	96.00	0.16	2	15.84	0.96	125.53	125.52	127.50
BM45-BM46	Circular	B-M45	B-M46	122.68	122.56	1.00	0.00	1.50	78.00	0.15	0	16.39	0.93	125.54	125.54	128.00
BM46-BM44	Circular	B-M46	B-M44	122.56	122.22	1.00	0.00	1.50	227.00	0.15	1	16.39	1.06	125.54	125.53	127.50
BM48-BM40	Circular	B-M48	B-M40	117.88	116.79	1.00	0.00	3.50	30.00	3.63	35	16.14	5.93	125.19	124.90	127.86
BM50-BM48	Circular	B-M50	B-M48	118.80	117.88	1.00	0.00	3.50	303.00	0.30	34	16.28	3.50	124.84	125.19	128.50
BM52-BM50	Circular	B-M52	B-M50	119.55	119.30	1.00	0.00	3.00	122.00	0.20	20	16.45	2.95	124.91	124.83	130.76
BM54-BM18	Circular	B-M54	B-M18	121.92	121.61	1.00	0.00	2.00	204.00	0.15	6	15.84	2.05	125.51	125.46	140.80
BM56-BM54	Circular	B-M56	B-M54	122.07	121.92	1.00	0.00	1.50	97.00	0.15	2	15.84	0.94	125.52	125.51	140.80
BM6-BM26	Circular	B-M6	B-M26	119.69	119.44	1.00	0.00	4.50	199.00	0.13	43	16.49	3.59	126.10	126.02	131.71
BM8-B20	Circular	B-M8	B20	121.35	121.10	1.00	0.00	1.50	46.00	0.54	2	15.80	3.36	124.52	124.49	127.17
BM9-BM52	Circular	B-M9	B-M52	119.71	119.55	1.00	0.00	3.00	78.00	0.21	-28	15.69	3.00	124.88	124.90	128.20
E131	**Natural**	**B-OUT**	**E131-OUT**	**116.66**	**117.85**	**1.00**	**0.00**	**0.00**	**475.00**	**-0.25**	**285**	**16.15**	**1.30**	**124.24**	**124.14**	**126.98**
C1-to-C3	Circular	C1	C3	154.99	152.54	1.00	0.00	1.50	150.00	1.63	2	15.76	5.37	155.41	153.09	160.21
C2-to-C4	Circular	C2	C4	154.99	152.54	1.00	0.00	1.50	150.00	1.63	2	15.76	5.36	155.40	153.09	160.21
C3-to-C5	Circular	C3	C5	152.54	149.28	1.00	0.00	1.50	200.00	1.63	4	15.76	6.38	153.09	149.96	158.92
C4-to-C6	Circular	C4	C6	152.54	149.28	1.00	0.00	1.50	200.00	1.63	4	15.76	6.28	153.09	149.98	158.50
C5-to-C7	Circular	C5	C7	149.28	143.50	1.00	0.00	1.50	300.00	1.93	6	15.77	7.87	149.96	144.17	155.99
C6-to-C8	Circular	C6	C8	149.28	146.02	1.00	0.00	1.50	200.00	1.63	6	15.77	7.36	149.98	146.72	155.99
C7-to-A-M3	Circular	C7	A-M3	139.00	138.85	1.00	0.00	1.50	50.00	0.30	9	15.77	5.46	140.43	140.03	149.17
C8-to-A-M4	Circular	C8	A-M4	136.50	136.26	1.00	0.00	1.50	80.00	0.30	8	15.77	4.87	137.87	137.36	151.67
D1-D3	Circular	D1	D3	119.88	119.76	1.00	0.00	2.00	141.00	0.09	10	15.99	3.90	122.48	122.21	125.50
D10-D9	Circular	D10	D9	119.05	118.86	1.00	0.00	1.50	75.00	0.25	2	15.75	2.77	121.64	121.62	123.85
D11-D13	Circular	D11	D13	115.89	115.83	1.00	0.00	5.00	146.00	0.04	54	16.03	3.43	121.59	121.53	123.45
D12-D11	Circular	D12	D11	117.65	117.54	1.00	0.00	2.50	75.00	0.15	4	15.81	2.91	121.60	121.59	123.45
D13-D15	Circular	D13	D15	115.83	115.76	1.00	0.00	5.00	146.00	0.05	61	16.02	3.87	121.53	121.45	123.73
D14-D13	Circular	D14	D13	119.26	119.07	1.00	0.00	1.50	75.00	0.25	2	15.76	3.05	121.56	121.53	124.06
D15-D17	Circular	D15	D17	115.76	115.10	1.00	0.00	5.00	306.00	0.22	69	16.02	4.28	121.45	121.24	124.63
D16-D15	Circular	D16	D15	120.16	119.97	1.00	0.00	1.50	75.00	0.25	3	16.01	3.24	121.51	121.45	124.96
D17-D19	Circular	D17	D19	115.10	115.03	1.00	0.00	5.00	116.00	0.06	78	16.03	3.86	121.24	121.14	124.63
D18-D17	Circular	D18	D17	120.16	119.97	1.00	0.00	1.50	75.00	0.25	3	16.01	3.43	121.32	121.24	124.96
D19-D21	Circular	D19	D21	115.03	114.95	1.00	0.00	5.00	115.00	0.07	85	16.03	4.18	121.14	121.02	123.49
D2-D1	Circular	D2	D1	122.50	122.01	1.00	0.00	1.50	115.00	0.43	7	15.93	4.76	123.70	123.04	126.00
D20-D19	Circular	D20	D19	119.02	118.83	1.00	0.00	1.50	75.00	0.25	3	16.01	3.09	121.19	121.14	123.82
D21-D23	Rectangular	D21	D23	114.95	114.89	1.00	5.00	5.00	112.00	0.05	91	16.03	3.64	121.02	120.94	123.40
D22-D21	Circular	D22	D21	118.60	118.41	1.00	0.00	1.50	75.00	0.25	3	16.01	2.96	121.07	121.02	123.40
D23-D25	Rectangular	D23	D25	114.89	114.74	1.00	5.00	5.00	250.00	0.06	104	16.03	4.14	120.94	120.69	122.99
D24-D23	Circular	D24	D23	117.19	116.89	1.00	0.00	2.50	72.00	0.42	6	15.92	3.28	120.96	120.94	122.99
D25-D27	Rectangular	D25	D27	114.74	114.56	1.00	5.00	5.00	275.00	0.07	114	16.02	4.55	120.69	120.36	122.83
D26-D25	Circular	D26	D25	118.36	117.74	1.00	0.00	1.50	72.00	0.86	5	15.91	5.07	120.85	120.69	123.16
D27-D29	Rectangular	D27	D29	114.56	114.37	1.00	5.00	5.00	260.00	0.07	126	16.02	5.03	120.36	119.98	122.78
D28-D27	Circular	D28	D27	118.31	117.56	1.00	0.00	1.50	72.00	1.04	6	15.92	5.79	120.60	120.36	123.11
D29-D31	Rectangular	D29	D31	114.37	114.27	1.00	5.00	5.00	123.00	0.08	132	16.02	5.27	119.98	119.78	122.65
D3-D5	Circular	D3	D5	119.26	119.10	1.00	0.00	2.50	141.00	0.11	17	16.03	4.71	122.21	122.00	124.84
D30-D29	Circular	D30	D29	118.18	117.38	1.00	0.00	1.50	72.00	1.11	3	15.94	4.80	120.07	119.98	122.98
D31-D33	Rectangular	D31	D33	114.27	114.07	1.00	6.00	5.00	352.00	0.06	146	16.02	4.86	119.78	119.36	122.43
D32-D31	Circular	D32	D31	116.63	116.28	1.00	0.00	2.50	71.00	0.49	8	15.93	4.01	119.81	119.78	122.43
D33-D35	Rectangular	D33	D35	114.07	113.90	1.00	6.00	5.00	258.00	0.07	159	16.02	5.31	119.36	119.10	122.71
D34-D33	Circular	D34	D33	117.79	116.59	1.00	0.00	2.00	71.00	1.69	7	15.94	6.69	119.35	119.36	123.04
D35-D37	**Rectangular**	**D35**	**D37**	**112.90**	**112.85**	**1.00**	**6.00**	**6.00**	**107.00**	**0.05**	**171**	**16.02**	**4.73**	**119.07**	**118.85**	**123.57**
D36-D35	Circular	D36	D35	118.77	116.92	1.00	0.00	1.50	71.00	2.61	6	15.76	8.75	119.60	119.07	123.57
D38-D36	Circular	D38	D36	120.50	119.50	1.00	0.00	1.50	73.00	1.37	3	15.75	5.75	121.01	120.01	123.50
D4-D3	Circular	D4	D3	120.37	120.14	1.00	0.00	1.50	92.00	0.25	4	15.75	3.46	122.29	122.21	125.17
D5-D7	Circular	D5	D7	117.98	117.83	1.00	0.00	3.00	166.00	0.09	24	16.03	4.65	122.00	121.79	124.26
D6-D5	Circular	D6	D5	119.79	119.56	1.00	0.00	1.50	87.00	0.26	3	15.76	3.30	122.05	122.00	124.59
D7-D9	Circular	D7	D9	116.83	116.54	1.00	0.00	4.00	261.00	0.11	37	16.02	4.07	121.79	121.62	123.71
D8-D7	Circular	D8	D7	118.46	118.34	1.00	0.00	2.00	80.00	0.15	5	15.74	3.41	121.83	121.79	123.71
D9-D11	Circular	D9	D11	115.92	115.89	1.00	0.00	5.00	106.00	0.03	42	16.03	2.76	121.62	121.59	123.52

Table 1.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (10-Year) - Outfalls 1-4

Model: 10YR_SegE_Existing.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
F1-F3	Circular	F1	F3	122.07	121.50	1.00	0.00	2.50	565.00	0.10	17	15.77	3.90	124.19	122.88	127.40
F10-F12	Circular	F10	F12	118.22	117.88	1.00	0.00	4.00	340.00	0.10	15	16.08	3.11	120.30	120.19	126.85
F11-F14	Circular	F11	F14	119.33	118.00	1.00	0.00	4.00	65.00	2.05	34	15.77	11.88	120.62	120.18	124.00
F12-F14	Circular	F12	F14	117.88	117.85	1.00	0.00	4.00	25.00	0.12	18	16.06	4.24	120.19	120.18	126.77
F13-F16	Circular	F13	F16	121.01	118.20	1.00	0.00	2.00	78.00	3.60	6	15.75	9.76	121.53	120.12	126.51
F14-F16	Circular	F14	F16	115.58	115.52	1.00	0.00	5.00	207.00	0.03	50	15.80	3.07	120.18	120.12	127.10
F15-F18	Circular	F15	F18	120.32	118.10	1.00	0.00	2.00	78.00	2.85	11	15.75	10.35	121.05	120.02	125.82
F16-F18	Circular	F16	F18	115.52	115.42	1.00	0.00	5.00	247.00	0.04	57	15.81	3.66	120.12	120.02	126.28
F17-F24	Circular	F17	F24	120.99	118.00	1.00	0.00	2.00	77.00	3.88	5	16.00	7.82	121.43	119.90	126.49
F18-F20	Circular	F18	F20	114.92	114.91	1.00	0.00	5.50	25.00	0.04	71	15.85	3.63	120.02	120.01	125.59
F19-F26	Circular	F19	F26	121.69	121.48	1.00	0.00	2.00	79.00	0.27	4	16.01	3.60	122.50	122.20	127.19
F2-F4	Circular	F2	F4	119.52	119.02	1.00	0.00	3.00	200.00	0.25	2	15.77	1.87	120.38	120.37	126.30
F20-F22	Circular	F20	F22	111.73	111.73	1.00	0.00	4.50	45.00	0.00	70	15.85	4.41	120.01	119.96	121.73
F21-F28	Circular	F21	F28	121.57	121.36	1.00	0.00	2.00	79.00	0.27	3	15.77	3.07	122.20	121.91	127.07
F22-F24	Circular	F22	F24	114.89	114.83	1.00	0.00	5.50	148.00	0.04	70	15.85	3.60	119.96	119.90	121.73
F24-F26	Circular	F24	F26	114.33	114.27	1.00	0.00	6.00	200.00	0.03	76	15.95	2.94	119.90	119.85	126.26
F26-F28	**Circular**	**F26**	**F28**	**114.27**	**114.19**	**1.00**	**0.00**	**6.00**	**250.00**	**0.03**	**82**	**16.03**	**3.06**	**119.85**	**119.71**	**126.97**
F3-F9	Circular	F3	F9	120.00	119.66	1.00	0.00	4.00	340.00	0.10	29	15.77	4.93	121.99	120.92	127.00
F4-F10	Circular	F4	F10	118.52	118.22	1.00	0.00	4.00	300.00	0.10	11	16.00	2.43	120.37	120.30	125.60
F5-F7	Circular	F5	F7	124.31	124.21	1.00	0.00	1.50	100.00	0.10	2	15.76	2.49	125.02	124.74	131.62
F6-F8	Circular	F6	F8	124.07	123.97	1.00	0.00	1.50	100.00	0.10	2	15.76	2.49	124.78	124.50	131.62
F7-F3	Circular	F7	F3	122.29	122.15	1.00	0.00	1.50	39.00	0.36	3	15.76	3.70	122.99	122.81	129.21
F8-F10	Circular	F8	F10	122.05	121.91	1.00	0.00	1.50	39.00	0.36	3	15.76	3.69	122.75	122.56	129.21
F9-F11	Circular	F9	F11	119.66	119.33	1.00	0.00	4.00	16.00	2.06	34	15.77	10.32	120.92	120.62	126.64
Link445	Circular	Node458	B-F61	0.05	0.00	1.00	0.00	0.05	10.00	0.50	4	15.35	8.07	126.11	126.79	128.91
Link445	Circular	Node458	B-F61	0.05	0.00	1.00	0.00	0.05	10.00	0.50	4	15.35	8.07	126.11	126.79	128.91

Table 2.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (10-Year) - Outfalls 5-6

Model: US290_SegD_Sys_StplwySH6_Ext10-adj-JKB.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 5																
L-A-10	Circular	A-10	MH-A-3	112.59	112.51	1.00	0.00	4.00	51.00	0.16	60	15.95	4.74	118.78	118.70	124.00
L-A-12	Circular	A-12	A-13	117.82	115.60	2.00	0.00	1.50	42.00	5.29	7	15.95	8.10	120.03	119.99	121.00
L-A-13	Circular	A-13	MH-A-10	114.33	114.02	1.00	0.00	3.00	203.00	0.15	26	15.99	3.70	119.99	119.68	121.00
L-A-14	Circular	A-14	MH-A-10	114.26	114.02	1.00	0.00	3.00	154.00	0.16	14	15.91	1.96	119.76	119.68	123.00
L-A-15	Circular	A-15	A-14	116.88	115.29	1.00	0.00	1.50	398.00	0.40	8	16.08	4.63	121.53	119.76	121.50
L-A-1AB	Rectangular	A-1AB	A-1BB	121.99	121.90	1.00	3.00	2.00	95.00	0.09	26	19.61	4.36	125.06	124.49	128.50
L-A-1AC	Trapezoidal	A-1AC	A-1AB	122.16	121.99	1.00	2.00	4.00	173.00	0.10	25	20.59	1.08	125.09	125.06	129.40
L-A-1AD	Rectangular	A-1AD	A-1AC	122.60	122.16	1.00	8.00	4.00	262.00	0.17	25	20.56	1.18	125.12	125.09	129.80
L-A-1AE	Trapezoidal	A-1AE	A-3AD	128.69	123.00	1.00	2.00	3.00	3195.00	0.18	32	16.81	1.92	130.73	125.23	132.50
L-A-1AF	Trapezoidal	A-1AF	A-1AE	134.00	128.69	1.00	2.00	2.00	5306.00	0.10	18	16.32	1.28	135.82	130.73	137.00
L-A-1BB	Trapezoidal	A-1BB	A-9	121.90	119.60	1.00	2.00	4.00	2801.00	0.08	26	20.17	1.59	124.49	120.68	128.50
L-A-2	Circular	A-2	A-6	119.43	118.76	1.00	0.00	2.50	334.00	0.20	22	15.98	4.53	124.93	123.97	126.00
L-A-2AD	Circular	A-2AD	A-3AD	123.30	123.00	3.00	0.00	3.00	90.25	0.33	-31	16.26	1.55	125.25	125.23	129.70
L-A-3	Circular	A-3	A-2	120.37	119.93	1.00	0.00	2.00	218.00	0.20	13	15.98	4.07	125.59	124.93	126.00
L-A-3AD	Trapezoidal	A-3AD	A-1AD	123.00	122.60	1.00	2.00	4.00	217.00	0.18	25	20.53	1.60	125.23	125.12	129.31
L-A-4	Rectangular	A-4	MH-A-7	113.28	113.02	1.00	9.00	5.00	130.00	0.20	143	16.03	4.26	119.07	118.94	124.00
L-A4-A9	Trapezoidal	A-4	A-9	120.05	119.60	1.00	2.00	3.50	135.00	0.33	0	0.00	0.00	119.03	119.03	124.00
L-A-5	Circular	A-5	A-6	118.16	117.76	1.00	0.00	2.50	199.00	0.20	9	15.95	2.01	124.04	123.96	124.00
L-A-6	Circular	A-6	MH-A-2	117.76	116.16	1.00	0.00	3.50	797.00	0.20	50	15.96	5.14	123.97	122.17	125.50
L-A-7	Rectangular	A-7	E112-01	112.46	112.30	1.00	9.00	5.00	77.00	0.21	335	15.98	7.43	118.65	118.47	123.50
L-A-8	Circular	A-8	MH-A-5	113.98	113.71	1.00	0.00	3.50	132.00	0.20	67	15.97	6.93	119.52	118.89	123.50
L-A-9	Circular	A-9	MH-A-7	113.69	113.51	1.00	0.00	4.00	91.00	0.20	28	15.89	4.80	119.03	118.94	124.00
L-AD-2	Trapezoidal	AD-2	A-7	121.23	121.00	1.00	2.00	2.50	100.00	0.23	23	15.86	2.87	122.81	122.02	125.72
L-AD-3	Trapezoidal	AD-3	AD-4	123.79	122.21	1.00	2.00	2.50	404.00	0.39	26	16.01	1.51	125.45	124.92	126.40
L-AD-4	Trapezoidal	AD-4	AD-5	122.21	121.89	1.00	2.00	3.00	347.00	0.09	31	16.04	1.11	124.92	124.76	126.40
L-AD-5	Trapezoidal	AD-5	AD-5A	121.89	121.41	1.00	2.00	3.00	786.00	0.06	36	16.09	1.20	124.76	124.31	125.40
L-AD-5A	Trapezoidal	AD-5A	A-4	121.41	120.05	1.00	2.00	3.00	776.00	0.18	53	16.17	2.45	124.31	121.56	127.10
L-AD-6	Trapezoidal	AD-6	AD-2	122.00	121.23	1.00	2.00	2.00	713.00	0.11	14	15.80	1.31	123.59	122.81	125.72
L-E112-OUT	**Trapezoidal**	**E112-00**	**E112-OUT**	**110.46**	**110.28**	**1.00**	**10.00**	**9.00**	**150.00**	**0.12**	**333**	**16.01**	**2.68**	**115.44**	**115.26**	**120.00**
L-E112-01	Rectangular	E112-01	E112-00	112.30	110.46	1.00	10.00	5.00	1536.00	0.12	334	15.98	6.70	118.47	115.44	123.00
L-MH-A-10	Circular	MH-A-10	MH-A-9	114.02	113.44	1.00	0.00	4.00	395.00	0.15	40	15.95	3.18	119.67	119.29	122.00
L-MH-A-2	Circular	MH-A-2	A-8	116.16	114.74	1.00	0.00	3.50	1082.00	0.13	50	15.97	5.13	122.17	119.52	124.50
L-MH-A-3	Rectangular	MH-A-3	A-7	112.51	112.46	1.00	9.00	5.00	25.00	0.20	294	15.98	6.51	118.70	118.65	123.19
L-MH-A-4	Rectangular	MH-A-4	MH-A-3	112.68	112.51	1.00	9.00	5.00	85.00	0.20	235	15.98	5.21	118.80	118.70	124.00
L-MH-A-5	Rectangular	MH-A-5	MH-A-4	112.86	112.68	1.00	9.00	5.00	88.00	0.20	235	15.98	5.21	118.89	118.80	126.10
L-MH-A-7	Rectangular	MH-A-7	MH-A-5	113.02	112.86	1.00	9.00	5.00	80.00	0.20	170	16.09	5.32	118.94	118.90	128.23
L-MH-A-9	Circular	MH-A-9	A-10	113.44	112.59	1.00	0.00	4.00	577.00	0.15	40	15.95	3.20	119.29	118.78	122.50
Outfalls 6																
L-A1	Circular	A1	A2	115.92	115.62	1.00	0.00	1.50	93.00	0.32	1	15.76	2.34	116.39	116.23	119.92
L-A10	Circular	A10	A11	111.45	110.76	1.00	0.00	3.00	48.00	1.44	11	15.77	7.38	112.23	112.17	117.61
L-A11	Rectangular	A11	A12	109.76	109.02	1.00	4.00	4.00	800.00	0.09	38	15.81	4.25	112.17	111.24	116.02
L-A12	Rectangular	A12	A13	108.02	107.33	1.00	5.00	5.00	705.00	0.10	68	15.94	4.24	111.24	110.97	115.22
L-A13	Rectangular	A13	A14	107.33	106.49	1.00	5.00	5.00	600.00	0.14	86	15.93	5.16	110.97	110.96	115.52
L-A14	Rectangular	A14	A15	105.49	104.63	1.00	6.00	6.00	1015.00	0.08	98	15.94	3.55	110.96	110.96	114.62
L-A15	Rectangular	A15	E135-03	104.63	104.48	1.00	6.00	6.00	669.00	0.02	127	15.96	4.51	110.96	110.95	112.60
L-A-2A	Trapezoidal	A-1A	A-2A	118.66	118.30	1.00	2.00	3.00	100.00	0.36	18	15.80	1.90	120.12	119.79	125.00
L-A-1A	Trapezoidal	A-1AA	A-1A	120.08	118.66	1.00	2.00	3.00	1203.00	0.12	12	15.75	1.20	121.66	120.12	125.00
L-A2	Circular	A2	A3	115.62	115.32	1.00	0.00	1.50	90.00	0.33	2	15.77	3.23	116.23	115.85	119.62
L-A-5A	Trapezoidal	A-2A	A-5A	118.30	116.90	1.00	2.00	3.00	452.00	0.31	18	15.85	1.37	119.79	119.31	125.00
L-A3	Circular	A3	A4	114.82	114.52	1.00	0.00	2.00	90.00	0.33	3	15.77	2.89	115.44	115.27	119.32
L-A4	Circular	A4	A5	114.52	114.22	1.00	0.00	2.00	90.00	0.33	4	15.77	3.62	115.27	114.97	119.02
L-A5	Circular	A5	A6	114.22	113.92	1.00	0.00	2.00	70.00	0.43	4	15.77	4.15	114.97	114.66	119.18

Table 2.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (10-Year) - Outfalls 5-6

Model: US290_SegD_Sys_StplwySH6_Ext10-adj-JKB.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-A-8A	Trapezoidal	A-5A	A-8A	116.90	116.70	1.00	2.00	3.00	597.00	0.03	25	15.96	1.32	119.31	118.86	125.00
L-A6	Circular	A6	A7	113.48	113.12	1.00	0.00	2.50	110.00	0.33	5	15.77	3.50	114.30	114.08	119.48
L-A7	Circular	A7	A8	113.12	112.82	1.00	0.00	2.50	98.00	0.31	7	15.77	3.82	114.08	113.84	118.58
L-A8	Circular	A8	A9	112.82	112.22	1.00	0.00	2.50	193.00	0.31	8	15.79	4.35	113.84	113.14	117.90
L-B-10A	Trapezoidal	A-8A	B-10A	116.70	115.70	1.00	2.00	3.00	805.00	0.12	23	16.13	1.03	118.86	118.48	125.00
L-A9	Circular	A9	A10	111.72	111.45	1.00	0.00	3.00	83.00	0.33	9	15.78	5.40	112.69	112.23	117.82
L-B1	Circular	B1	B2	114.49	112.24	1.00	0.00	2.00	221.00	1.02	10	16.01	7.12	115.44	113.19	118.77
L-B-11A	Trapezoidal	B-10A	B-11A	115.70	115.62	1.00	2.00	3.00	698.00	0.01	33	16.19	1.38	118.48	117.81	125.00
L-B-13A	Trapezoidal	B-11A	B-13A	115.62	114.70	1.00	2.00	3.00	301.00	0.31	38	16.20	1.69	117.81	117.42	125.00
Link980	Circular	B-12A	B-11A	116.50	115.62	1.00	0.00	2.00	72.00	1.22	0	15.48	0.03	117.81	117.81	118.50
L-B-14A	Trapezoidal	B-13A	B-14A	114.70	114.34	1.00	2.00	3.00	301.00	0.12	38	16.26	1.31	117.42	117.20	125.00
L-B-16A	Trapezoidal	B-14A	B-16A	114.34	113.93	1.00	2.00	3.00	520.00	0.08	43	16.26	1.47	117.20	116.71	125.00
L-B-18A	Trapezoidal	B-16A	B-18A	113.93	113.12	1.00	2.00	3.00	653.00	0.12	49	16.28	2.10	116.71	115.21	125.00
L-E13504	Trapezoidal	B-18A	E135-04	113.12	108.90	1.00	2.00	3.00	440.00	0.96	53	16.30	3.83	115.21	111.15	125.00
L-B2	Circular	B2	A11	111.24	110.72	1.00	0.00	3.00	306.00	0.17	21	16.01	5.07	113.12	112.18	116.22
L-C1	Circular	C1	C2	113.62	113.37	1.00	0.00	1.50	78.00	0.32	1	15.76	2.86	114.12	113.80	117.61
L-C2	Circular	C2	C3	112.87	112.30	1.00	0.00	2.00	189.00	0.30	2	15.76	1.98	113.42	113.25	117.82
L-C3	Circular	C3	C4	112.28	112.25	1.00	0.00	2.00	5.00	0.60	4	15.76	2.54	113.25	113.20	117.91
L-C4	Circular	C4	C5	112.25	111.67	1.00	0.00	2.00	187.00	0.31	6	15.77	4.06	113.20	112.50	116.47
L-C5	Circular	C5	C6	111.17	110.87	1.00	0.00	2.50	93.00	0.32	9	15.77	5.76	112.18	111.53	117.99
L-C6	Circular	C6	A12	110.87	109.94	1.00	0.00	2.50	49.00	1.90	9	15.77	8.02	111.53	111.24	117.77
L-D1	Circular	D1	D2	113.72	113.09	1.00	0.00	1.50	203.00	0.31	3	15.78	3.44	114.50	113.73	117.70
L-D2	Circular	D2	D3	112.59	112.27	1.00	0.00	2.00	98.00	0.33	5	15.77	3.71	113.50	113.24	117.62
L-E13504.1	Trapezoidal	D-2A	E135-04	113.05	108.59	1.00	2.00	3.00	160.00	2.79	9	15.75	3.46	113.72	111.15	125.00
L-D3	Circular	D3	D4	112.27	111.99	1.00	0.00	2.00	88.00	0.32	7	15.77	5.70	113.24	112.53	117.31
L-D-2A	Trapezoidal	D-3A	D-2A	113.22	113.05	1.00	2.00	3.00	200.00	0.09	2	15.58	0.80	113.95	113.72	125.00
L-D4	Circular	D4	A13	111.99	109.32	1.00	0.00	2.00	49.00	5.45	8	15.77	11.78	112.53	110.97	118.22
L-D-3A	Trapezoidal	D-4A	D-3A	113.70	113.22	1.00	2.00	3.00	350.00	0.14	2	15.51	0.76	114.37	113.95	125.00
L-E1	Circular	E1	E2	113.22	112.48	1.00	0.00	1.50	180.00	0.41	1	15.76	2.91	113.66	112.89	116.64
E135.1	**Natural**	**E135-02**	**E135-01**	**104.14**	**103.73**	**1.00**	**0.00**	**0.00**	**87.60**	**0.47**	**603**	**17.03**	**4.27**	**110.92**	**110.88**	**118.83**
E135.2	Natural	E135-03	E135-02	104.48	104.14	1.00	0.00	0.00	61.00	0.56	600	17.02	3.70	110.95	110.92	116.70
E135.3	Natural	E135-04	E135-03	105.42	104.48	1.00	0.00	10.83	235.00	0.40	578	17.05	3.62	**111.15**	110.95	125.00
E135.4	Natural	E135-05	E135-04	105.79	105.42	1.00	0.00	0.00	94.00	0.39	539	17.28	3.67	111.26	111.15	119.00
E135.5	Circular	E135-06	E135-05	105.90	105.79	2.00	0.00	7.00	63.00	0.17	505	17.28	7.20	112.87	111.26	117.00
E135.5	Natural	E135-06	E135-05	113.94	113.94	1.00	0.00	0.00	63.00	0.00	0	0.00	0.00	111.26	111.26	117.00
E135.5	Natural	E135-06	E135-05	113.94	113.94	1.00	0.00	0.00	63.00	0.00	0	0.00	0.00	111.26	111.26	117.00
E135.6	Natural	E135-07	E135-06	106.02	105.90	1.00	0.00	0.00	74.00	0.17	505	17.28	2.43	112.91	112.87	117.05
E135.7	Natural	E135-08	E135-07	106.80	106.02	1.00	0.00	0.00	463.00	0.17	648	17.26	2.40	113.19	112.91	117.00
L-E2	Circular	E2	E3	111.98	111.72	1.00	0.00	2.00	185.00	0.14	3	15.76	3.02	112.79	112.19	116.32
L-E3	Circular	E3	A14	111.72	108.35	1.00	0.00	2.00	48.00	7.02	7	15.76	12.17	112.19	110.96	116.21
L-E4	Circular	E4	E3	112.42	111.72	1.00	0.00	1.50	90.00	0.78	2	15.76	4.31	112.91	112.19	116.42
E535.2	Circular	E535-02	E135-07	107.00	106.02	1.00	0.00	2.00	90.00	1.09	-23	16.84	5.11	112.18	112.91	117.00
E535.2	Circular	E535-02	E135-07	0.05	0.00	1.00	0.00	0.05	10.00	0.50	-122	17.27	0.00	###########	###########	117.00
E535.2	Circular	E535-02	E135-07	0.05	0.00	1.00	0.00	0.05	10.00	0.50	-122	17.27	0.00	###########	###########	117.00
L-F1	Circular	F1	F2	111.52	111.06	1.00	0.00	1.50	105.00	0.44	2	16.00	3.18	112.14	111.84	115.66
L-F2	Circular	F2	F3	111.06	110.64	1.00	0.00	1.50	98.00	0.43	4	15.77	4.06	111.84	111.37	115.18
L-F3	Circular	F3	F4	110.14	109.72	1.00	0.00	2.00	98.00	0.43	6	15.77	4.19	111.01	110.96	114.83
L-F4	Circular	F4	F5	109.72	108.86	1.00	0.00	2.00	205.00	0.42	7	15.78	4.63	110.96	110.96	115.22
L-F5	Circular	F5	F6	108.36	107.96	1.00	0.00	2.50	98.00	0.41	9	15.96	5.34	110.96	110.96	114.80
L-F6	Circular	F6	A15	107.96	106.23	1.00	0.00	2.50	48.00	3.60	15	15.94	4.23	110.96	110.96	114.25
L-F7	Circular	F7	F6	110.32	108.96	1.00	0.00	1.50	160.00	0.85	4	15.76	5.06	110.97	110.96	114.33
L-G1	Circular	G1	G2	110.64	110.41	1.00	0.00	1.50	70.00	0.33	3	15.75	3.16	111.34	111.14	114.61
L-G2	Circular	G2	E135-02	110.41	109.94	1.00	0.00	1.50	155.00	0.30	3	15.76	3.35	111.14	110.92	115.05
L-L1	Circular	L1	L2	111.82	111.52	1.00	0.00	1.50	95.00	0.32	1	15.52	1.55	112.10	112.01	115.82
L-L2	Circular	L2	L3	111.52	111.22	1.00	0.00	1.50	93.00	0.32	1	15.53	2.80	112.01	111.64	115.52
L-L3	Circular	L3	L4	110.22	109.92	1.00	0.00	2.50	95.00	0.32	11	16.00	4.47	111.46	111.21	115.30
L-L4	Circular	L4	L5	109.92	109.29	1.00	0.00	2.50	203.00	0.31	12	15.79	4.91	111.21	110.93	115.53
L-L5	Circular	L5	L6	108.79	108.46	1.00	0.00	3.00	100.00	0.33	12	15.78	4.63	110.93	110.92	115.51
L-L6	Circular	L6	L7	108.46	108.16	1.00	0.00	3.00	90.00	0.33	13	15.79	4.64	110.92	110.92	115.18
L-L7	Circular	L7	L8	108.16	107.83	1.00	0.00	3.00	103.00	0.32	14	15.79	4.56	110.92	110.92	114.88

Table 2.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (10-Year) - Outfalls 5-6

Model: US290_SegD_Sys_StplwySH6_Ext10-adj-JKB.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-L8	Circular	L8	L9	107.83	107.62	1.00	0.00	3.00	65.00	0.32	16	15.79	4.81	110.92	110.92	114.60
L-L9	Circular	L9	E135-02	107.62	107.02	1.00	0.00	3.00	193.00	0.31	18	15.80	5.37	110.92	110.92	115.06
L-M1	Circular	M1	L3	110.80	110.72	1.00	0.00	2.00	32.00	0.25	9	16.00	5.00	111.97	111.80	114.80
L-E13505	Trapezoidal	ML-D1	E135-05	110.50	107.50	1.00	2.00	4.00	50.00	6.00	37	16.01	6.22	111.56	111.26	120.00
L-ML-D1	Trapezoidal	ML-D3	ML-D1	116.20	110.50	1.00	2.00	2.00	2833.00	0.20	29	17.21	2.65	124.89	111.56	120.11
L-ML-D3	Trapezoidal	ML-D4	ML-D3	119.97	116.20	1.00	2.00	2.00	3771.00	0.10	18	19.37	1.12	127.20	124.89	125.51
L-ML-D4	Trapezoidal	ML-D5	ML-D4	122.17	119.97	1.00	2.00	4.00	2955.00	0.07	67	16.09	1.69	127.26	127.20	128.50
L-ML-D5	Rectangular	ML-D6	ML-D5	122.59	122.17	1.00	8.00	4.00	322.00	0.13	73	15.89	2.89	127.27	127.26	128.50
L-ML-D6	Trapezoidal	ML-D7	ML-D6	127.66	122.59	1.00	2.00	4.00	3453.00	0.15	41	15.89	1.75	129.73	127.27	132.00
L-ML-D7	Trapezoidal	ML-D8	ML-D7	132.98	127.66	1.00	2.00	2.00	5321.09	0.10	16	16.03	1.17	134.69	129.73	137.14

Table 3.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (10-Year) - Outfalls 7-8

Model: E127Existing_10.xp & BW8Existing_10.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 7-8																
L-CA-11	Circular	CA-11	CT-11	102.94	101.28	1	0.00	1.50	48.00	3.46	8.91	16.01	4.97	107.05	106.77	107.44
L-CA-12	Circular	CA-12	CT-12	103.21	101.84	1	0.00	1.50	48.00	2.85	0.82	15.61	0.52	106.78	106.78	107.71
L-CA-13	Circular	CA-13	CT-13	103.25	101.92	1	0.00	1.50	48.00	2.77	0.56	15.61	0.31	106.82	106.82	107.75
L-CA-15	Circular	CA-15	CT-15	102.83	102.01	1	0.00	1.50	48.00	1.71	10.09	15.76	6.82	107.08	106.88	107.33
L-CA-17	Circular	CA-17	CT-17	103.06	102.09	1	0.00	1.50	48.00	2.02	0.91	15.77	0.51	107.14	107.14	107.56
L-CA-18	Circular	CA-18	CT-18	103.52	102.17	1	0.00	1.50	48.00	2.81	7.60	16.01	4.25	107.42	107.21	108.02
L-CA-19	Circular	CA-19	CT-19	103.31	102.21	1	0.00	1.50	48.00	2.29	2.24	15.77	1.26	107.25	107.24	107.81
L-CA-20	Circular	CA-20	CT-20	103.11	102.24	1	0.00	1.50	48.00	1.81	-0.51	15.58	0.12	107.27	107.26	107.61
L-CA-21	Circular	CA-21	CT-21	102.90	102.27	1	0.00	1.50	48.00	1.31	5.36	15.77	3.00	107.38	107.29	107.40
L-CA-22	Circular	CA-22	CT-22	102.68	102.31	1	0.00	1.50	48.00	0.77	-0.44	15.58	0.09	107.31	107.31	107.18
L-CA-23	Circular	CA-23	CT-23	102.51	102.01	1	0.00	1.50	48.00	1.04	-0.95	16.01	0.33	107.33	107.33	107.01
L-CA-24	Circular	CA-24	CT-24	102.42	102.04	1	0.00	1.50	48.00	0.79	-1.47	16.01	0.55	107.35	107.35	106.92
L-CA-25	Circular	CA-25	CT-25	102.67	102.09	1	0.00	1.50	48.00	1.21	4.13	15.88	2.31	107.43	107.38	107.17
L-CA-26	Circular	CA-26	CT-26	102.87	102.45	1	0.00	1.50	48.00	0.88	0.65	15.59	1.23	107.41	107.41	113.37
L-CA-27	Circular	CA-27	CT-27	102.86	102.51	1	0.00	1.50	48.00	0.73	0.46	15.59	1.12	107.46	107.45	107.36
L-CA-31	Circular	CA-31	CT-30	102.53	102.30	1	0.00	1.50	48.00	0.48	12.35	16.50	6.88	108.10	107.57	107.03
L-CA-32	Circular	CA-32	CT-32	102.46	102.11	1	0.00	1.50	48.00	0.73	-1.87	16.03	1.04	107.65	107.65	106.96
L-CA-33	Circular	CA-33	CT-33	102.15	101.97	1	0.00	1.50	48.00	0.38	18.40	17.31	10.25	108.89	107.68	106.65
L-CA-34	Circular	CA-34	CT-34	102.38	102.02	1	0.00	1.50	48.00	0.75	-2.81	16.06	1.37	107.70	107.70	106.88
L-CA-35	Circular	CA-35	CT-36	102.45	102.10	1	0.00	1.50	48.00	0.73	11.49	15.69	6.42	108.09	107.72	106.95
L-CA-36	Circular	CA-36	CT-37	102.24	102.09	1	0.00	1.50	48.00	0.31	-4.25	16.08	1.95	107.74	107.73	106.74
L-CA-37	Circular	CA-37	CT-39	102.21	101.75	1	0.00	1.50	48.00	0.96	7.79	15.93	4.33	107.92	107.75	107.71
L-CA-4	Circular	CA-4	CT-3	102.72	101.44	1	0.00	1.50	48.00	2.67	13.61	15.76	7.62	107.12	106.71	107.72
L-CA-6	Circular	CA-6	CT-5	102.39	101.51	1	0.00	1.50	48.00	1.83	12.73	15.76	7.13	107.06	106.72	106.89
L-CA-8	Circular	CA-8	CT-7	102.99	101.58	1	0.00	1.50	48.00	2.94	5.96	16.01	3.33	106.74	106.73	107.49
L-CA-9	Circular	CO-9	CN-2	107.34	107.16	1	0.00	2.50	45.00	0.40	27.92	15.77	6.62	111.92	111.85	112.22
L-CB-1	Circular	CB-1	CB-2	103.79	103.42	1	0.00	1.50	39.00	0.95	2.09	16.39	3.43	107.33	107.32	108.79
L-CB-10	Circular	CB-10	CT-18	103.76	101.64	1	0.00	2.00	200.00	1.06	9.07	15.60	2.89	107.37	107.21	107.70
L-CB-11	Circular	CB-11	CT-23a	103.99	102.35	1	0.00	1.50	232.00	0.71	4.13	15.59	2.28	107.47	107.34	108.99
L-CB-14	Circular	CB-14	CT-27A	103.23	102.00	1	0.00	2.00	187.00	0.66	10.58	15.76	3.34	107.72	107.46	108.29
L-CB-15	Circular	CB-15	CB-14	103.99	103.73	1	0.00	1.50	45.00	0.58	2.49	15.76	3.23	107.74	107.72	109.00
L-CB-16	Circular	CB-16	CB-19	103.05	101.57	1	0.00	2.00	160.00	0.93	23.05	16.01	7.24	109.18	107.64	113.85
L-CB-17	Circular	CB-17	CB-16	104.11	103.55	1	0.00	1.50	60.00	0.93	3.90	16.07	4.19	109.25	109.18	109.11
L-CB-18	Circular	CB-18	CT-30	102.07	102.00	1	0.00	1.50	12.00	0.58	1.13	15.56	0.64	107.57	107.57	113.85
L-CB-19	Circular	CB-19	CT-31	101.07	101.00	1	0.00	2.50	12.00	0.58	23.04	16.01	4.65	107.64	107.62	113.85
L-CB-2	Circular	CB-2	CT-3	102.92	101.12	1	0.00	2.00	193.00	0.93	16.73	15.85	5.28	107.32	106.71	107.03
L-CB-26	Circular	CB-26	CT-37	101.57	101.50	1	0.00	2.00	12.00	0.58	2.11	15.76	0.66	107.73	107.73	125.54
L-CB-28	Circular	CB-28	CB-29	122.00	121.63	1	0.00	1.50	24.00	1.54	2.13	15.76	5.89	122.43	121.96	127.50
L-CB-29	Circular	CB-29	CB-26	121.63	119.16	1	0.00	1.50	68.00	3.63	2.13	15.76	7.37	121.96	119.49	126.50
L-CB-3	Circular	CB-3	CB-4	103.99	103.61	1	0.00	1.50	39.00	0.97	1.80	16.01	3.53	106.81	106.79	108.99
L-CB-4	Circular	CB-4	CT-8	103.11	101.10	1	0.00	2.00	193.00	1.04	7.67	16.01	2.42	106.79	106.74	107.25
L-CB-5	Circular	CB-5	CB-6	103.99	103.60	1	0.00	1.50	39.00	1.00	1.98	15.61	3.50	106.96	106.94	108.99
L-CB-6	Circular	CB-6	CT-11a	103.14	101.28	1	0.00	2.00	193.00	0.96	7.69	16.01	2.43	106.94	106.78	107.25
L-CB-7	Circular	CB-7	CB-8	103.99	103.67	1	0.00	1.50	39.00	0.82	1.87	16.01	3.25	107.23	107.22	108.99
L-CB-8	Circular	CB-8	CT-14a	103.17	101.46	1	0.00	2.00	193.00	0.89	10.11	16.01	3.19	107.22	106.86	107.25
L-CB-9	Circular	CB-9	CB-10	103.99	103.76	1	0.00	1.50	32.00	0.72	2.00	16.01	1.94	107.38	107.37	108.99
L-CN-1	Circular	CN-1	CN-2	107.94	107.16	1	0.00	2.50	486.00	0.16	13.34	15.77	3.53	112.04	111.85	111.19
L-CN-2	Rectangular	CN-2	CN-3	105.66	105.16	1	4.00	4.00	315.00	0.16	50.03	16.93	3.11	111.85	111.77	110.69
L-CN-3	Rectangular	CN-3	CN-4	105.16	104.52	1	4.00	4.00	400.00	0.16	47.96	16.94	2.99	111.77	111.65	110.61
L-CN-4	Rectangular	CN-4	CN-5	104.52	103.72	1	4.00	4.00	500.00	0.16	81.54	16.54	5.39	111.65	110.72	110.28
L-CN-5	Rectangular	CN-5	CN-6	103.72	102.76	1	4.00	4.00	600.00	0.16	87.58	16.51	5.46	110.72	109.52	110.00
L-CN-6	Rectangular	CN-6	CN-7	102.76	102.12	1	4.00	4.00	395.00	0.16	90.65	16.47	5.65	109.52	108.65	110.00
L-CN-7	Rectangular	CN-7	CN-8	101.12	99.56	1	5.00	5.00	980.00	0.16	125.52	16.01	5.01	108.65	107.36	109.60
L-CN-8	Rectangular	CN-8	CN-9	99.56	98.93	1	5.00	5.00	390.00	0.16	144.14	16.01	5.75	107.36	106.96	107.53
L-CO-1	Circular	CO-1	CO-3	110.70	110.09	1	0.00	1.50	185.00	0.33	2.45	15.78	2.52	111.95	111.95	114.30
L-CO-10	Circular	CO-10	CO-9	109.00	108.34	1	0.00	1.50	110.00	0.60	10.72	15.84	6.02	112.87	111.92	112.48
L-CO-3	Circular	CO-3	CO-5	109.59	109.00	1	0.00	2.00	181.00	0.33	7.54	15.78	3.75	111.95	112.11	114.20
L-CO-5	Circular	CO-5	CO-9	108.50	107.34	1	0.00	2.50	363.00	0.32	11.17	16.92	2.68	112.11	111.92	114.04
L-CP-1	Circular	CP-1	CP-2	108.75	108.45	1	0.00	1.50	93.00	0.32	2.03	16.93	2.40	112.21	112.21	112.11
L-CP-2	Circular	CP-2	CP-3	107.95	107.35	1	0.00	2.00	190.00	0.32	8.32	15.97	3.67	112.21	112.01	112.56

Table 3.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (10-Year) - Outfalls 7-8

Model: E127Existing_10.xp & BW8Existing_10.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-CP-3	Circular	CP-3	CP-4	107.35	107.05	1	0.00	2.00	93.00	0.32	10.09	16.92	3.19	112.01	111.92	112.16
L-CP-4	Circular	CP-4	CN-4	107.05	106.52	1	0.00	2.00	30.00	1.77	28.82	15.75	10.51	111.92	111.65	111.78
L-CP-5	Circular	CP-5	CP-4	108.28	107.55	1	0.00	1.50	93.00	0.78	9.55	15.74	5.94	112.40	111.92	112.00
L-CP-6	Circular	CP-6	CP-5	109.00	108.28	1	0.00	1.50	97.00	0.74	9.48	15.74	5.89	112.92	112.40	112.30
L-CQ-1	Circular	CQ-1	CQ-3	108.22	107.88	1	0.00	1.50	115.00	0.30	-1.31	15.76	0.87	111.31	111.30	112.16
L-CQ-10	Circular	CQ-10	CQ-9	108.55	108.27	1	0.00	1.50	85.00	0.33	3.34	16.01	3.77	109.35	108.97	110.65
L-CQ-2	Circular	CQ-3	CQ-5	107.38	106.52	1	0.00	2.00	275.00	0.31	11.00	16.01	4.44	111.30	110.66	111.61
L-CQ-5	Circular	CQ-5	CQ-7	106.02	105.12	1	0.00	2.50	300.00	0.30	20.69	15.78	4.65	110.66	110.00	111.88
L-CQ-7	Circular	CQ-7	CQ-8	105.12	104.48	1	0.00	2.50	210.00	0.30	27.45	16.01	5.78	110.00	109.07	111.58
L-CQ-8	Circular	CQ-8	CQ-9	103.98	103.50	1	0.00	3.00	153.00	0.31	28.65	16.01	5.41	109.07	108.79	111.39
L-CQ-9	Circular	CQ-9	CN-7	103.50	103.12	1	0.00	3.00	58.00	0.66	32.57	16.01	6.64	108.79	108.65	111.37
L-CR-1	Circular	CR-1	CR-3	107.50	106.88	1	0.00	1.50	155.00	0.40	3.05	15.76	3.76	108.23	107.54	110.40
L-CR-3	Circular	CR-3	CR-5	106.38	105.06	1	0.00	2.00	330.00	0.40	6.48	15.74	4.42	107.43	107.34	109.90
L-CR-5	Circular	CR-5	CR-6	104.56	103.94	1	0.00	2.50	155.00	0.40	8.67	15.71	5.35	107.34	107.39	110.59
L-CR-6	Circular	CR-6	CN-8	103.94	102.06	1	0.00	2.50	50.00	3.76	12.68	15.67	7.22	107.39	107.36	110.45
L-CR-8	Circular	CR-8	CR-6	105.77	104.94	1	0.00	1.50	165.00	0.50	2.61	15.79	3.73	107.35	107.39	108.83
L-CS-1	Circular	CS-1	CS-2	108.50	107.70	1	0.00	2.50	195.00	0.41	23.36	16.79	5.74	112.78	112.36	112.10
L-CS-2	Circular	CS-2	CN-4	107.70	105.70	1	0.00	2.50	226.00	0.88	27.88	15.75	6.47	112.36	111.65	112.10
L-CT-1	Rectangular	CT-1	CT-98	98.93	98.87	2	7.00	4.00	114.00	0.05	220.54	15.76	3.93	106.68	106.66	194.50
L-CT-10	Rectangular	CT-10	CT-9	99.42	99.37	2	7.00	4.00	100.00	0.05	166.48	15.76	2.96	106.77	106.76	106.92
L-CT-11	Rectangular	CT-11	CT-10	99.46	99.42	2	7.00	4.00	90.00	0.04	156.55	15.76	2.79	106.77	106.77	194.50
L-CT-11a	Rectangular	CT-11a	CT-11	99.48	99.46	2	7.00	4.00	30.00	0.07	149.15	15.76	2.66	106.78	106.77	194.50
L-CT-12	Rectangular	CT-12	CT-11a	99.51	99.48	2	7.00	4.00	60.00	0.05	142.20	15.76	2.53	106.78	106.78	194.50
L-CT-13	Rectangular	CT-13	CT-12	99.59	99.51	2	7.00	4.00	170.00	0.05	141.46	15.76	2.52	106.82	106.78	194.50
L-CT-14	Rectangular	CT-14a	CT-13	99.66	99.59	2	7.00	4.00	148.94	0.05	140.96	15.76	2.51	106.86	106.82	194.50
L-CT-15	Rectangular	CT-15	CT-14a	99.68	99.66	2	5.00	4.00	33.00	0.06	131.85	15.76	3.29	106.88	106.86	107.20
L-CT-17	Rectangular	CT-17	CT-15	99.76	99.68	2	5.00	4.00	160.00	0.05	108.29	15.69	5.40	107.14	106.88	194.50
L-CT-18	Rectangular	CT-18	CT-17	99.84	99.76	1	8.00	4.00	155.00	0.05	107.59	15.69	3.35	107.21	107.14	194.50
L-CT-19	Rectangular	CT-19	CT-18	99.88	99.84	1	8.00	4.00	70.00	0.06	94.96	15.68	2.96	107.24	107.21	194.50
L-CT-20	Rectangular	CT-20	CT-19	99.91	99.88	1	8.00	4.00	65.00	0.05	93.18	15.68	2.90	107.26	107.24	194.50
L-CT-21	Rectangular	CT-21	CT-20	99.94	99.91	1	8.00	4.00	70.00	0.04	93.25	15.68	2.91	107.29	107.26	194.50
L-CT2-1	Circular	CT2-1	CT2-2	105.84	105.46	1	0.00	1.50	90.00	0.42	2.06	16.01	2.85	106.62	106.62	108.82
L-CT-22	Rectangular	CT-22	CT-21	99.98	99.94	1	8.00	4.00	72.00	0.06	88.91	15.68	2.77	107.31	107.29	194.50
L-CT2-2	Circular	CT2-2	6832.00	105.46	104.66	1	0.00	1.50	198.00	0.40	3.41	15.85	3.86	106.62	106.61	109.33
L-CT-23	Rectangular	CT-23	CT-22	100.01	99.98	1	8.00	4.00	58.00	0.05	88.97	15.68	2.77	107.33	107.31	194.50
L-CT-23a	Rectangular	CT-23a	CT-23	100.02	100.01	1	8.00	4.00	20.00	0.05	89.05	15.68	2.78	107.34	107.33	194.50
L-CT-24	Rectangular	CT-24	CT-23a	100.04	100.02	1	8.00	4.00	35.00	0.06	86.61	15.68	2.70	107.35	107.34	194.50
L-CT-25	Rectangular	CT-25	CT-24	100.09	100.04	1	8.00	4.00	105.00	0.05	86.68	15.68	2.70	107.38	107.35	194.50
L-CT-26	Rectangular	CT-26	CT-25	100.12	100.09	1	7.00	4.00	70.00	0.04	83.46	15.68	2.97	107.41	107.38	194.50
L-CT-27	Rectangular	CT-27	CT-26	100.18	100.12	1	7.00	4.00	120.00	0.05	83.03	15.68	2.96	107.45	107.41	194.50
L-CT-27a	Rectangular	CT-27A	CT-27	100.20	100.18	1	7.00	4.00	30.00	0.07	82.71	15.68	2.95	107.46	107.45	194.50
L-CT-29	Rectangular	CT-29	CT-27A	100.27	100.20	1	6.00	4.00	162.79	0.04	73.09	16.47	3.03	107.53	107.46	194.50
L-CT-3	Rectangular	CT-3	CT-1	99.11	99.02	2	7.00	4.00	264.00	0.03	220.58	15.76	3.93	106.71	106.68	194.50
L-CT-30	Rectangular	CT-30	CT-29	100.30	100.27	1	5.00	4.00	69.00	0.04	73.09	16.47	3.64	107.57	107.53	194.50
L-CT-31	Rectangular	CT-31	CT-30	100.37	100.30	1	5.00	4.00	122.00	0.06	57.86	16.52	2.88	107.62	107.57	194.50
L-CT-32	Rectangular	CT-32	CT-31	100.41	100.37	1	4.00	4.00	88.00	0.05	47.83	16.53	2.98	107.65	107.62	194.50
L-CT-33	Rectangular	CT-33	CT-32	100.41	100.41	1	4.00	4.00	116.00	0.00	46.07	16.61	2.87	107.68	107.65	106.40
L-CT-34	Rectangular	CT-34	CT-33	100.52	100.41	1	4.00	4.00	99.00	0.11	27.92	15.59	1.74	107.70	107.68	194.50
L-CT-35	Rectangular	CT-35	CT-34	100.55	100.52	1	4.00	4.00	75.00	0.04	26.67	15.59	1.66	107.70	107.70	194.50
L-CT-36	Circular	CT-36	CT-35	100.60	100.55	1	0.00	4.00	100.00	0.05	26.19	15.59	2.08	107.72	107.70	194.50
L-CT-37	Circular	CT-37	CT-36	100.65	100.60	1	0.00	4.00	100.00	0.05	15.14	15.58	1.20	107.73	107.72	106.50
L-CT-38	Circular	CT-38	CT-37	101.20	101.15	1	0.00	3.50	100.00	0.05	15.63	15.93	1.62	107.74	107.73	194.50
L-CT-39	Circular	CT-39	CT-38	101.75	101.70	1	0.00	3.00	100.00	0.05	7.79	15.93	1.10	107.75	107.74	194.50
L-CT-5	Rectangular	CT-5	CT-3	99.18	99.11	2	7.00	4.00	127.27	0.05	191.10	15.76	3.40	106.72	106.71	194.50
L-CT-7	Rectangular	CT-7	CT-5	99.25	99.18	2	7.00	4.00	127.27	0.05	178.39	15.76	3.18	106.73	106.72	194.50
L-CT-8	Rectangular	CT-8	CT-7	99.30	99.25	2	7.00	4.00	90.00	0.06	173.34	15.76	3.09	106.74	106.73	194.50
L-CT-9	Rectangular	CT-9	CT-8	99.37	99.30	2	7.00	4.00	140.00	0.05	166.48	15.76	2.96	106.76	106.74	194.50
L-CT-97	Rectangular	CT-98	CT-99	98.87	98.81	2	7.00	4.00	116.00	0.05	249.19	15.76	4.44	106.66	106.65	194.50
L-CT-98	Rectangular	CT-99	6863.30	98.81	98.45	2	7.00	4.00	116.00	0.31	259.10	15.76	4.61	106.65	106.63	194.50
L-CU-2	Circular	CU-2	CU-3	105.12	104.85	1	0.00	1.50	83.00	0.33	13.14	16.01	7.39	108.50	107.21	108.54
L-CU-3	Circular	CU-3	6832.00	104.35	103.46	1	0.00	2.00	296.00	0.30	15.69	16.01	4.90	107.21	106.61	108.11

Table 3.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (10-Year) - Outfalls 7-8

Model: E127Existing_10.xp & BW8Existing_10.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Link587	Natural	7253.30	7216.80	99.47	99.44	1	0.00	0.00	36.50	0.08	585.64	17.26	5.69	106.94	106.70	112.56
Link588	Natural	7185.00	7185(ml)	98.45	98.45	1	0.00	0.00	70.00	0.00	620.67	17.26	1.71	106.73	106.71	112.55
Link589	Natural	6863.30	6832.00	98.45	98.77	1	0.00	0.00	31.30	-1.02	769.16	16.93	2.04	106.63	106.61	112.55
Link590	**Natural**	**6832.00**	**6325.00**	**98.77**	**97.83**	**1**	**0.00**	**0.00**	**507.00**	**0.19**	**771.44**	**16.95**	**3.48**	**106.61**	**105.73**	**112.84**
Link615	Circular	X-21	RD-1	106.77	106.44	1	0.00	2.50	33.00	1.00	1.66	16.01	4.09	107.11	106.84	109.50
Link616	Circular	X-22	RD-1	106.77	106.44	1	0.00	2.50	33.00	1.00	1.07	16.01	3.59	107.05	106.84	109.50
Link617	Circular	X-23	RD-1	106.77	106.44	1	0.00	2.50	33.00	1.00	1.27	16.01	3.77	107.07	106.84	109.50
Link618	Circular	X-24	RD-1	106.77	106.44	1	0.00	2.50	33.00	1.00	1.67	16.01	4.10	107.11	106.84	109.50
Link619	Circular	X-25	RD-2	105.63	105.30	1	0.00	2.50	33.00	1.00	1.67	16.01	4.03	106.82	106.82	109.50
Link620	Circular	X-26	RD-2	105.63	105.30	1	0.00	2.50	33.00	1.00	1.47	16.00	3.90	106.82	106.82	109.50
Link621	Circular	X-27	RD-2	105.63	105.30	1	0.00	2.50	33.00	1.00	1.80	16.01	4.16	106.82	106.82	109.50
Link622	Circular	X-28	RD-5	104.45	104.12	1	0.00	2.00	33.00	1.00	1.54	15.76	2.50	106.80	106.80	109.50
Link623	Circular	X-29	RD-5	104.45	104.12	1	0.00	2.00	33.00	1.00	1.24	16.01	1.95	106.80	106.80	108.50
Link624	Circular	X-30	RD-5	104.45	104.12	1	0.00	2.00	33.00	1.00	3.65	15.76	4.50	106.80	106.80	108.50
Link625	Circular	X-31	RD-5	104.45	104.12	1	0.00	2.00	33.00	1.00	1.88	15.76	2.87	106.80	106.80	108.50
Link626	Circular	X-32	RD-6	103.22	102.89	1	0.00	2.00	33.00	1.00	2.02	15.82	1.93	106.77	106.77	109.50
Link627	Circular	X-33	RD-6	103.22	102.89	1	0.00	2.00	33.00	1.00	2.10	15.76	2.02	106.77	106.77	109.50
Link628	Circular	X-34	RD-6	103.22	102.89	1	0.00	2.00	33.00	1.00	3.06	15.98	2.54	106.77	106.77	109.50
Link629	Circular	X-35	RD-6	103.22	102.89	1	0.00	2.00	33.00	1.00	2.53	16.01	2.16	106.77	106.77	109.50
Link630	Circular	X-36	RD-7	102.16	101.83	1	0.00	2.00	33.00	1.00	1.99	16.01	0.63	106.75	106.75	109.50
Link631	Circular	X-37	RD-7	102.16	101.83	1	0.00	2.00	33.00	1.00	1.72	15.86	0.55	106.75	106.75	109.50
Link632	Circular	X-38	RD-7	102.16	101.83	1	0.00	2.00	33.00	1.00	1.97	15.76	0.62	106.75	106.75	109.50
Link633	Circular	X-39	RD-7	102.16	101.83	1	0.00	2.00	33.00	1.00	2.80	15.76	0.89	106.75	106.75	109.50
Link634	Circular	X-43	RD-8	102.27	101.94	1	0.00	2.00	33.00	1.00	1.53	16.00	0.48	106.81	106.81	109.50
Link635	Circular	X-42	RD-8	102.27	101.94	1	0.00	2.00	33.00	1.00	1.60	16.01	0.50	106.81	106.81	109.50
Link636	Circular	X-41	RD-8	102.27	101.94	1	0.00	2.00	33.00	1.00	1.64	15.76	0.52	106.81	106.81	109.50
Link637	Circular	X-40	RD-8	102.27	101.94	1	0.00	2.00	33.00	1.00	2.88	15.76	0.91	106.81	106.81	109.50
Link649	Circular	RD-8	7185.00	100.94	100.30	1	0.00	4.00	636.00	0.10	21.50	15.76	1.75	106.81	106.73	109.50
Link652	Circular	RD-9	RD-8	102.29	100.94	1	0.00	2.00	1352.00	0.10	10.25	15.27	3.23	108.16	106.81	109.50
Link653	Circular	RD-10	RD-9	103.38	102.29	1	0.00	2.00	1087.00	0.10	6.09	15.28	2.01	108.66	108.16	109.50
Link655	Natural	7216.80	7185.00	99.44	98.45	1	0.00	0.00	31.80	3.11	585.89	17.26	5.38	106.70	106.73	112.55
Link656	Trapezoidal	CS-5	7185(ml)	108.75	108.50	1	5.00	1.00	250.00	0.10	14.05	16.48	2.31	111.04	109.06	110.50
Link657	Trapezoidal	CS-6	7185(ml)	108.65	108.50	1	4.00	1.00	150.00	0.10	7.73	16.01	1.59	109.65	108.94	110.50
Link658	Trapezoidal	CS-3	CS-4	109.50	109.45	1	5.00	0.90	50.00	0.10	9.02	16.12	1.30	112.22	112.16	110.50
Link659	Trapezoidal	CS-4	CS-5	109.45	108.75	1	5.00	1.00	700.00	0.10	10.05	17.44	1.26	112.16	111.04	110.50
Link661	Rectangular	CN-9	6863.30	98.93	98.45	1	5.00	5.00	307.00	0.16	155.10	16.01	6.19	106.96	106.63	107.53
Link662	Circular	CA-1	CT-98	103.12	101.20	1	0.00	1.50	48.00	4.00	16.47	15.76	9.24	107.20	106.66	109.20
Link663	Circular	CA-2	CT-98	103.12	101.20	1	0.00	1.50	48.00	4.00	1.66	15.61	1.02	106.66	106.66	108.31
Link664	Circular	CA-3	CT-98	103.12	101.20	1	0.00	1.50	48.00	4.00	-3.37	15.62	1.44	106.66	106.66	108.02
Link665	Natural	7185(ml)	6863.30	98.45	98.45	1	0.00	0.00	251.70	0.00	637.36	17.26	1.77	106.71	106.63	112.55
L-RD-1	Trapezoidal	RD-1	RD-2	105.44	104.30	1	2.00	4.00	1144.00	0.10	5.18	16.07	0.66	106.84	106.82	109.50
L-RD-2	Trapezoidal	RD-2	RD-3	104.30	103.79	1	2.00	4.00	508.00	0.10	9.49	15.87	1.02	106.82	106.82	109.50
L-RD-3	Circular	RD-3	RD-4	103.79	103.73	1	0.00	2.50	60.00	0.10	9.21	16.26	3.06	106.82	106.81	109.50
L-RD-4	Trapezoidal	RD-4	RD-5	103.73	103.12	1	2.00	4.00	613.00	0.10	9.42	16.34	0.81	106.81	106.80	109.50
L-RD-5	Trapezoidal	RD-5	RD-6	103.12	101.89	1	2.00	4.00	1225.00	0.10	15.56	17.43	1.02	106.80	106.77	109.50
L-RD-6	Trapezoidal	RD-6	RD-7	101.89	100.84	1	2.00	4.00	1054.00	0.10	23.95	17.43	0.76	106.77	106.75	109.50
L-RD-7	Trapezoidal	RD-7	7185.00	100.84	100.33	1	2.00	4.00	510.00	0.10	-42.21	15.73	0.54	106.75	106.73	109.50
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Link551	Circular	SNT01	CC-40	0.00	0.00	1	0.00	2.00	33.00	0.00	0.00	0.00	0.00	97.08	100.41	105.50
L-CC-1	Circular	CC-1	CC-4	98.03	97.84	1	0.00	2.00	59.00	0.32	10.42	15.76	4.39	100.50	100.50	104.03
L-CC-11	Circular	CC-11	CC-12	112.69	112.14	1	0.00	1.50	25.00	2.20	0.00	0.00	0.00	112.14	112.14	116.57
L-CC-12	Circular	CC-12	CC-13	112.14	110.50	1	0.00	1.50	73.00	2.25	0.00	0.00	0.00	100.73	100.73	116.57
L-CC-13	Circular	CC-13	CJ-3	100.50	98.68	1	0.00	2.00	55.00	3.31	1.16	15.75	5.71	100.73	100.49	116.57
L-CC-14	Circular	CC-14	CJ-29	100.50	97.75	1	0.00	1.50	54.00	5.09	1.41	15.76	6.42	100.75	100.49	116.22
L-CC-15	Circular	CC-15	CC-16	102.78	102.48	1	0.00	1.50	100.00	0.30	1.18	15.76	2.50	103.24	102.97	108.78
L-CC-16	Circular	CC-16	CC-19	102.00	101.77	1	0.00	2.00	70.00	0.33	6.26	15.76	4.36	102.97	102.67	108.48
L-CC-17	Circular	CC-17	CC-16	102.85	102.48	1	0.00	1.50	60.00	0.62	4.43	15.76	4.75	103.63	103.26	108.30
L-CC-18	Circular	CC-18	CC-17	103.43	102.85	1	0.00	1.50	100.00	0.58	1.06	15.76	1.75	103.80	103.63	107.93
L-CC-19	Circular	CC-19	CC-22	101.77	97.94	1	0.00	2.00	170.00	2.25	13.99	15.76	9.97	102.67	100.48	116.62
L-CC-2	Circular	CC-2	CC-1	102.31	99.53	1	0.00	1.50	100.00	2.78	8.20	15.76	9.75	103.03	100.50	106.81

Table 3.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (10-Year) - Outfalls 7-8

Model: E127Existing_10.xp & BW8Existing_10.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-CC-20	Circular	CC-20	CC-19	110.24	110.02	1	0.00	1.50	73.00	0.30	4.00	15.77	3.97	111.13	110.78	116.69
L-CC-21	Circular	CC-21	CC-20	110.52	110.24	1	0.00	1.50	95.00	0.29	2.45	15.76	2.53	111.26	111.13	117.51
L-CC-22	Circular	CC-22	CJ-4	97.94	97.16	1	0.00	2.00	32.00	2.44	13.80	15.77	9.50	100.48	100.48	116.29
L-CC-23	Circular	CC-23	CJ-5	98.00	97.60	1	0.00	1.50	32.00	1.25	2.64	15.97	4.70	100.48	100.48	116.50
L-CC-24	Circular	CC-24	CJ-6a	98.00	98.00	1	0.00	1.50	30.00	0.00	3.48	15.76	3.64	100.48	100.47	117.29
L-CC-25	Circular	CC-25	CC-26	102.60	102.41	1	0.00	1.50	60.00	0.32	1.78	15.76	3.13	103.17	102.91	107.10
L-CC-26	Circular	CC-26	CC-30	100.49	100.33	1	0.00	2.00	52.00	0.31	7.96	15.76	5.17	101.54	101.23	106.99
L-CC-27	Circular	CC-27	CC-26	102.59	102.41	1	0.00	1.50	60.00	0.30	0.79	15.76	2.42	102.97	102.74	107.09
L-CC-28	Circular	CC-28	CC-31	100.29	97.34	1	0.00	2.50	172.00	1.72	12.80	15.76	7.91	101.12	100.47	120.08
L-CC-29	Circular	CC-29	CC-28	115.60	100.29	1	0.00	1.50	150.00	10.21	2.47	15.76	4.31	115.88	101.12	123.40
L-CC-3	Circular	CC-3	CC-2	103.94	102.31	1	0.00	1.50	100.00	1.63	2.74	15.76	4.33	104.40	103.03	108.44
L-CC-30	Circular	CC-30	CC-28	100.33	100.29	1	0.00	2.00	14.00	0.29	7.97	15.76	6.07	101.23	101.12	105.82
L-CC-31	Circular	CC-31	CJ-8a	97.34	96.83	1	0.00	2.50	30.00	1.70	12.63	15.84	7.36	100.47	100.47	119.84
L-CC-32	Circular	CC-32	CJ-10	97.71	97.17	1	0.00	1.50	30.00	1.80	5.21	15.76	6.57	100.46	100.46	123.21
L-CC-33	Circular	CC-33	CC-34	99.86	97.42	1	0.00	2.00	172.00	1.42	15.99	15.76	9.06	101.02	100.45	126.35
L-CC-34	Circular	CC-34	CJ-12a	97.42	96.50	1	0.00	2.00	30.00	3.07	15.85	15.77	10.29	100.45	100.45	126.10
L-CC-35	Circular	CC-35	CC-36	102.53	102.26	1	0.00	1.50	90.00	0.30	0.86	15.76	2.44	102.94	102.60	107.03
L-CC-36	Circular	CC-36	CC-33	100.82	100.32	1	0.00	2.00	80.00	0.63	10.35	16.01	5.90	101.91	101.41	106.82
L-CC-37	Circular	CC-37	CC-36	102.42	102.26	1	0.00	1.50	55.00	0.29	1.00	15.77	2.59	102.85	102.63	106.92
L-CC-38	Circular	CC-38	CC-33	121.64	120.36	1	0.00	1.50	150.00	0.85	3.94	15.76	5.21	122.31	121.03	128.41
L-CC-39	Circular	CC-39	CJ-14	97.89	96.82	1	0.00	1.50	30.00	3.57	4.14	15.75	7.92	100.44	100.44	128.16
L-CC-4	Circular	CC-4	CC-5	97.84	97.30	1	0.00	2.00	172.00	0.31	10.30	15.81	4.69	100.50	100.49	103.78
L-CC-40	Rectangular	CC-40	CC-43	95.40	95.25	1	6.00	3.00	80.00	0.19	14.09	15.90	2.74	100.42	100.42	106.03
L-CC-42	Circular	CC-42	CC-40	101.87	100.91	1	0.00	1.50	40.00	2.40	6.95	15.76	8.85	102.56	101.59	105.97
L-CC-43	Rectangular	CC-43	CC-44	95.25	94.98	1	6.00	4.00	149.00	0.18	18.47	15.89	3.14	100.42	100.42	106.47
L-CC-44	Rectangular	CC-44	CJ-17	94.98	94.88	1	6.00	4.00	48.00	0.21	21.94	15.89	3.81	100.42	100.42	106.49
L-CC-45	Circular	CC-45	CC-57	101.04	100.80	1	0.00	1.50	80.00	0.30	4.22	15.76	2.33	102.81	102.68	106.40
L-CC-46	Circular	CC-46	CC-45	101.15	101.04	1	0.00	1.50	36.00	0.31	4.21	15.76	2.28	102.87	102.81	106.65
L-CC-47	Circular	CC-47	CC-43	100.25	100.08	1	0.00	1.50	53.00	0.32	3.05	15.77	3.72	100.99	100.74	106.10
L-CC-48	Circular	CC-48	CC-47	100.54	100.25	1	0.00	1.50	96.00	0.30	3.06	15.76	3.40	101.32	100.99	106.10
L-CC-49	Circular	CC-49	CC-48	100.52	100.54	1	0.00	1.50	55.00	-0.04	3.06	15.76	2.95	101.44	101.32	106.20
L-CC-5	Circular	CC-5	CJ-1	97.30	96.60	1	0.00	2.50	62.00	1.13	13.00	15.83	3.46	100.49	100.50	123.44
L-CC-50	Circular	CC-50	CJ-18	100.96	96.48	1	0.00	1.50	48.00	9.33	0.00	0.00	0.00	100.96	100.41	106.10
L-CC-51	Circular	CC-51	CJ-19	100.55	96.31	1	0.00	1.50	48.00	8.83	3.87	15.76	11.66	100.91	100.41	106.46
L-CC-52	Circular	CC-52	CC-51	100.69	100.55	1	0.00	1.50	45.00	0.31	3.87	15.76	5.86	101.48	100.91	106.19
L-CC-53	Circular	CC-53	CC-54	122.20	121.65	1	0.00	1.50	186.00	0.30	3.28	15.78	3.56	123.05	122.34	127.92
L-CC-54	Circular	CC-54	CJ-22	98.50	96.17	1	0.00	1.50	35.00	6.66	3.28	15.78	9.91	100.40	100.40	127.94
L-CC-55	Circular	CC-55	CJ-24	98.50	95.96	1	0.00	1.50	35.00	7.26	4.95	15.75	11.59	100.39	100.39	124.89
L-CC-56	Circular	CC-10	CJ-2	100.00	99.65	1	0.00	1.50	35.00	1.00	3.07	16.00	5.16	100.56	100.49	117.72
L-CC-57	Circular	CC-57	CC-40	100.80	101.27	1	0.00	1.50	43.00	-1.09	8.29	15.76	5.28	102.68	102.38	105.90
L-CC-6	Circular	CC-6	CJ-27	99.50	98.51	1	0.00	2.00	60.00	1.65	7.99	15.76	7.90	100.50	100.50	121.44
L-CC-7	Circular	CC-7	CC-6	118.03	116.45	1	0.00	1.50	69.00	2.29	6.74	15.76	8.63	118.71	117.13	121.50
L-CC-8	Circular	CC-8	CC-7	118.60	118.03	1	0.00	1.50	25.00	2.28	5.17	15.75	7.32	119.19	118.71	121.50
L-CC-9	Circular	CC-9	CJ-28	98.73	96.40	1	0.00	1.50	59.00	3.95	2.89	15.83	2.89	100.49	100.49	119.39
L-CD-1	Circular	CD-1	CJ-4	101.03	97.67	1	0.00	1.50	18.00	18.67	0.00	0.00	0.00	101.03	100.48	107.03
L-CD-10	Circular	CD-10	CJ-15	100.70	96.76	1	0.00	1.50	18.00	21.89	8.87	15.75	20.86	101.13	100.43	106.70
L-CD-11	Circular	CD-11	CJ-16	100.37	96.66	1	0.00	1.50	18.00	20.61	2.90	15.76	13.87	100.62	100.42	106.37
L-CD-12	Circular	CD-12	CJ-17	99.26	93.96	1	0.00	3.00	178.00	2.98	0.52	18.86	0.14	100.42	100.42	105.84
L-CD-13	Circular	CD-13	CD-12	100.40	100.26	1	0.00	2.00	73.00	0.19	-0.01	19.78	0.26	100.42	100.42	105.84
L-CD-14	Circular	CD-14	CJ-21	99.30	96.20	1	0.00	1.50	18.00	17.22	9.09	16.00	18.59	100.40	100.40	106.11
L-CD-15	Circular	CD-15	CJ-23	97.50	96.07	1	0.00	1.50	18.00	7.94	3.00	15.75	10.65	100.40	100.39	105.12
L-CD-16	Circular	CD-16	CJ-25	97.50	95.90	1	0.00	2.50	18.00	8.89	3.45	15.75	10.60	100.39	100.39	104.21
L-CD-17	Circular	CD-17	CJ-30	97.32	95.65	1	0.00	1.50	18.00	9.28	6.38	15.75	13.73	100.38	100.38	103.32
L-CD-18	Circular	CD-18	CJ-32	97.54	95.55	1	0.00	1.50	18.00	11.06	-0.04	18.15	0.02	100.37	100.37	103.54
L-CD-19	Circular	CD-19	CJ-35	97.41	95.34	1	0.00	1.50	18.00	11.50	7.14	16.00	14.32	100.37	100.36	103.41
L-CD-2	Circular	CD-2	CJ-5	100.82	97.60	1	0.00	1.50	18.00	17.89	11.56	15.75	20.99	101.34	100.48	106.80
L-CD-20	Circular	CD-20	CJ-37	97.01	95.22	1	0.00	1.50	18.00	9.94	5.32	15.75	13.17	100.36	100.36	103.01
L-CD-21	Circular	CD-21	CJ-37a	96.61	95.12	1	0.00	1.50	18.00	8.28	5.41	15.75	12.40	100.36	100.35	102.61
L-CD-22	Circular	CD-22	CJ-37b	96.91	95.00	1	0.00	1.50	18.00	10.61	11.20	15.75	16.85	100.35	100.35	102.91
L-CD-23	Circular	CD-23	CJ-39	96.81	94.79	1	0.00	2.50	18.00	11.22	12.87	15.75	16.96	100.34	100.34	102.81
L-CD-24	Circular	CD-24	CJ-41	96.41	94.73	1	0.00	1.50	18.00	9.33	11.67	15.75	16.57	100.34	100.34	102.41

Table 3.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (10-Year) - Outfalls 7-8

Model: E127Existing_10.xp & BW8Existing_10.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-CD-27	Circular	CD-27	CJ-45	96.41	94.40	1	0.00	1.50	18.00	11.17	29.44	16.00	21.01	100.32	100.32	102.41
L-CD-28	Circular	CD-28	CJ-46	96.71	94.29	1	0.00	1.50	18.00	13.44	17.02	16.00	19.30	100.32	100.32	102.71
L-CD-29	Circular	CD-29	CJ-49	96.24	93.43	1	0.00	1.50	18.00	15.61	15.45	15.75	21.73	100.30	100.30	102.24
L-CD-3	Circular	CD-3	CJ-6	100.71	97.53	1	0.00	1.50	18.00	17.67	0.00	0.00	0.00	100.71	100.48	106.71
L-CD-30	Circular	CD-30	CJ-51	95.60	93.84	1	0.00	2.50	18.00	9.78	3.34	16.00	9.44	100.30	100.30	101.60
L-CD-31	Circular	CD-31	CJ-52	95.60	93.74	1	0.00	1.50	18.00	10.33	7.80	15.75	14.07	100.30	100.29	101.81
L-CD-32	Circular	CD-32	CJ-54	95.90	93.54	1	0.00	1.50	20.00	11.80	-0.40	17.89	0.34	100.29	100.29	101.90
L-CD-4	Circular	CD-4	CJ-7	100.83	97.45	1	0.00	1.50	18.00	18.78	1.49	15.76	10.03	101.02	100.47	106.83
L-CD-5	Circular	CD-5	CJ-8	101.06	97.37	1	0.00	1.50	18.00	20.50	0.00	0.00	0.00	101.06	100.47	107.06
L-CD-6	Circular	CD-6	CJ-9	101.07	97.20	1	0.00	1.50	18.00	21.50	8.67	15.75	20.49	101.50	100.46	107.07
L-CD-7	Circular	CD-7	CJ-11	100.86	97.13	1	0.00	1.50	18.00	20.72	0.00	0.00	0.00	100.86	100.45	106.86
L-CD-8	Circular	CD-8	CJ-12	100.76	97.00	1	0.00	1.50	18.00	20.89	0.00	0.00	0.00	100.76	100.45	106.76
L-CD-9	Circular	CD-9	CJ-13	100.85	96.98	1	0.00	2.50	18.00	21.50	0.00	0.00	0.00	100.85	100.44	106.85
L-CE-1	Circular	CE-1	CE-2	99.90	99.57	1	0.00	1.50	115.00	0.29	0.75	15.77	2.24	100.41	100.40	105.57
L-CE-10	Circular	CE-10	CJ-33	97.77	95.39	1	0.00	1.50	50.00	4.76	2.66	15.76	7.79	100.37	100.37	116.98
L-CE-11	Circular	CE-11	CE-4	97.31	96.95	1	0.00	1.50	45.00	0.80	1.07	15.78	2.60	100.39	100.39	123.68
L-CE-2	Circular	CE-2	CE-3	99.57	97.77	1	0.00	1.50	155.00	1.16	1.40	15.78	2.25	100.40	100.39	105.07
L-CE-3	Circular	CE-3	CE-4	97.77	96.95	1	0.00	2.00	144.00	0.57	6.25	15.77	5.01	100.39	100.39	104.27
L-CE-4	Circular	CE-4	CE-5	96.45	96.23	1	0.00	2.50	111.00	0.20	9.23	15.78	3.89	100.39	100.38	103.45
L-CE-5	Circular	CE-5	CE-6	95.73	95.58	1	0.00	3.00	75.00	0.20	23.38	16.01	5.57	100.38	100.38	103.93
L-CE-6	Circular	CE-6	CE-7	95.08	95.01	1	0.00	3.50	35.00	0.20	26.27	16.01	4.20	100.38	100.38	102.50
L-CE-7	Circular	CE-7	CE-8	95.01	94.88	1	0.00	3.50	171.00	0.08	28.31	16.01	5.13	100.38	100.37	120.31
L-CE-8	Circular	CE-8	CJ-31	93.88	93.56	1	0.00	3.50	40.00	0.80	28.46	16.01	5.88	100.37	100.37	119.65
L-CE-9	Circular	CE-9	CE-3	98.65	98.27	1	0.00	1.50	45.00	0.84	3.71	15.76	5.11	100.39	100.39	124.60
L-CF-1	Circular	CF-1	CF-2	109.51	109.06	1	0.00	1.50	150.00	0.30	2.03	15.76	2.20	110.15	110.00	117.75
L-CF-2	Circular	CF-2	CF-3	109.06	108.63	1	0.00	1.50	145.00	0.30	4.04	15.78	3.84	110.00	109.40	117.42
L-CF-3	Circular	CF-3	CJ-37	96.00	95.29	1	0.00	1.50	100.00	0.71	4.04	15.78	4.59	100.36	100.36	115.42
L-CG-1	Circular	CG-1	CG-2	99.24	98.12	1	0.00	1.50	129.00	0.87	2.73	15.76	4.32	100.36	100.36	103.93
L-CG-10	Circular	CG-10	CJ-37b	93.91	93.57	1	0.00	3.00	65.00	0.52	31.36	15.78	6.29	100.35	100.35	101.50
L-CG-11	Circular	CG-11	CG-6	97.70	97.32	1	0.00	1.50	85.00	0.45	2.70	15.76	2.98	100.36	100.36	116.84
L-CG-2	Circular	CG-2	CG-3	97.62	97.39	1	0.00	2.00	117.00	0.20	7.61	15.76	4.28	100.36	100.35	102.62
L-CG-3	Circular	CG-3	CG-8	95.59	95.13	1	0.00	2.50	115.00	0.40	21.66	15.78	5.44	100.35	100.35	103.23
L-CG-4	Circular	CG-4	CG-3	95.91	95.59	1	0.00	2.50	159.00	0.20	13.32	15.78	3.53	100.36	100.35	103.11
L-CG-5	Circular	CG-5	CG-4	96.59	96.41	1	0.00	2.00	88.00	0.20	4.56	15.77	2.74	100.36	100.36	102.90
L-CG-6	Circular	CG-6	CG-5	97.32	97.09	1	0.00	1.50	114.00	0.20	3.35	15.77	3.46	100.36	100.36	103.32
L-CG-7	Circular	CG-7	CG-4	97.28	95.91	1	0.00	1.50	90.00	1.52	7.86	15.76	5.36	100.36	100.36	114.44
L-CG-8	Circular	CG-8	CG-9	95.13	94.53	1	0.00	2.50	150.00	0.40	24.90	15.78	6.30	100.35	100.35	114.59
L-CG-9	Circular	CG-9	CG-10	94.00	93.91	1	0.00	3.00	30.00	0.30	29.17	15.78	5.48	100.35	100.35	114.59
L-CH-1	Circular	CH-1	CJ-38	96.50	94.90	1	0.00	1.50	95.00	1.68	5.79	15.76	6.80	100.35	100.35	102.91
L-CH-2	Circular	CH-2	CH-3	96.50	95.46	1	0.00	1.50	55.00	1.89	-0.15	17.93	0.10	100.34	100.34	116.87
L-CH-3	Circular	CH-3	CJ-40	95.46	94.73	1	0.00	1.50	35.00	2.09	-0.27	17.86	0.39	100.34	100.34	107.65
L-CJ-1	Circular	CJ-1	CJ-27	96.60	96.51	1	0.00	4.00	82.00	0.11	15.18	15.84	1.71	100.50	100.50	106.61
L-CJ-10	Rectangular	CJ-10	CJ-11	94.50	94.46	1	5.00	5.00	30.00	0.13	107.10	15.82	5.37	100.46	100.45	106.86
L-CJ-11	Rectangular	CJ-11	CJ-12	94.46	94.39	1	5.00	5.00	70.00	0.10	107.07	15.83	5.37	100.45	100.45	106.86
L-CJ-12	Rectangular	CJ-12	CJ-12a	94.39	94.32	1	5.00	5.00	50.00	0.14	107.06	15.83	5.37	100.45	100.45	106.76
L-CJ-12a	Rectangular	CJ-12a	CJ-13	94.32	94.31	1	5.00	5.00	25.00	0.04	122.59	15.83	6.19	100.45	100.44	106.85
L-CJ-13	Rectangular	CJ-13	CJ-14	94.31	94.15	1	5.00	5.00	125.00	0.13	122.50	15.83	6.26	100.44	100.44	106.85
L-CJ-14	Rectangular	CJ-14	CJ-15	94.15	94.09	1	5.00	5.00	75.00	0.08	126.34	15.83	6.61	100.44	100.43	106.70
L-CJ-15	Rectangular	CJ-15	CJ-16	94.09	93.99	1	5.00	5.00	96.00	0.10	134.81	15.83	7.40	100.43	100.42	106.70
L-CJ-16	Rectangular	CJ-16	CJ-17	93.99	93.88	1	5.00	5.00	99.00	0.11	137.56	15.84	8.31	100.42	100.42	106.37
L-CJ-17	Rectangular	CJ-17	CJ-18	92.88	92.82	1	8.00	6.00	51.00	0.12	158.93	15.86	4.50	100.42	100.41	105.84
L-CJ-18	Rectangular	CJ-18	CJ-19	92.82	92.70	1	8.00	6.00	100.00	0.12	158.85	15.86	4.44	100.41	100.41	106.11
L-CJ-19	Rectangular	CJ-19	CJ-20	92.70	92.65	1	8.00	6.00	50.00	0.10	163.42	15.86	4.52	100.41	100.41	106.11
L-CJ-2	Circular	CJ-2	CJ-2A	96.32	96.30	1	0.00	4.00	20.00	0.10	46.40	15.80	5.08	100.49	100.49	106.65
L-CJ-20	Rectangular	CJ-20	CJ-21	92.65	92.59	1	8.00	6.00	63.00	0.10	163.37	15.86	4.49	100.41	100.40	106.11
L-CJ-21	Rectangular	CJ-21	CJ-22	92.59	92.51	1	8.00	6.00	50.00	0.16	171.29	15.88	4.66	100.40	100.40	106.11
L-CJ-22	Rectangular	CJ-22	CJ-23	92.51	92.40	1	8.00	6.00	95.00	0.12	174.35	15.88	4.69	100.40	100.39	105.12
L-CJ-23	Rectangular	CJ-23	CJ-24	92.40	92.29	1	8.00	6.00	103.00	0.11	177.06	15.88	4.70	100.39	100.39	105.12
L-CJ-24	Rectangular	CJ-24	CJ-25	92.29	92.23	1	8.00	6.00	45.00	0.13	181.50	15.87	4.77	100.39	100.39	104.21
L-CJ-25	Rectangular	CJ-25	CJ-26	92.23	92.12	1	8.00	6.00	100.00	0.11	184.64	15.87	4.81	100.39	100.38	104.21
L-CJ-26	Rectangular	CJ-26	CJ-30	92.32	92.04	1	8.00	6.00	71.00	0.39	188.91	15.87	4.97	100.38	100.38	103.32

Table 3.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (10-Year) - Outfalls 7-8

Model: E127Existing_10.xp & BW8Existing_10.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-CJ-27	Circular	CJ-27	CJ-28	96.51	96.40	1	0.00	4.00	100.00	0.11	23.14	15.81	2.47	100.50	100.49	107.05
L-CJ-28	Circular	CJ-28	CJ-2	96.40	96.32	1	0.00	4.00	72.00	0.11	42.90	15.82	4.66	100.49	100.49	106.80
L-CJ-29	Rectangular	CJ-29	CJ-4	95.09	95.00	1	5.00	4.00	82.00	0.11	50.49	15.83	2.63	100.49	100.48	106.63
L-CJ-2a	Circular	CJ-2A	CJ-3	96.30	96.18	1	0.00	4.00	74.00	0.16	47.05	15.82	5.23	100.49	100.49	195.50
L-CJ-3	Circular	CJ-3	CJ-29	96.18	96.09	1	0.00	4.00	80.00	0.11	48.58	15.82	5.84	100.49	100.49	107.53
L-CJ-30	Rectangular	CJ-30	CJ-31	92.04	91.95	1	8.00	6.00	79.00	0.11	194.78	15.88	4.95	100.38	100.37	103.32
L-CJ-31	Rectangular	CJ-31	CJ-32	91.95	91.94	1	9.00	6.00	12.00	0.08	222.47	15.89	5.00	100.37	100.37	103.54
L-CJ-32	Rectangular	CJ-32	CJ-33	91.94	91.78	1	9.00	6.00	133.00	0.12	222.47	15.89	4.96	100.37	100.37	103.54
L-CJ-33	Rectangular	CJ-33	CJ-35	91.78	91.73	1	9.00	6.00	53.00	0.09	225.09	15.89	4.96	100.37	100.36	103.41
L-CJ-35	Rectangular	CJ-35	CJ-37	91.73	91.62	1	9.00	6.00	98.00	0.11	231.56	15.90	5.06	100.36	100.36	103.41
L-CJ-37	Rectangular	CJ-37	CJ-37a	91.62	91.51	1	9.00	6.00	95.00	0.12	239.94	15.90	5.19	100.36	100.35	103.01
L-CJ-37a	Rectangular	CJ-37a	CJ-37b	91.51	91.46	1	9.00	6.00	46.00	0.11	244.73	15.90	5.25	100.35	100.35	102.61
L-CJ-37b	Rectangular	CJ-37b	CJ-37c	91.46	91.40	1	9.00	6.00	55.00	0.11	284.32	15.89	6.08	100.35	100.35	195.50
L-CJ-37c	Rectangular	CJ-37c	CJ-38	91.40	91.29	1	9.00	6.00	96.00	0.11	284.26	15.89	6.05	100.35	100.35	102.91
L-CJ-38	Rectangular	CJ-38	CJ-39	91.29	91.18	1	9.00	6.00	100.00	0.11	289.53	15.89	6.13	100.35	100.34	102.91
L-CJ-39	Rectangular	CJ-39	CJ-40	91.18	91.12	1	9.00	6.00	50.00	0.12	300.43	15.88	6.34	100.34	100.34	102.81
L-CJ-4	Rectangular	CJ-4	CJ-5	95.00	94.93	1	5.00	4.00	73.00	0.10	63.73	15.81	3.28	100.48	100.48	107.03
L-CJ-40	Rectangular	CJ-40	CJ-41	91.12	91.06	1	9.00	6.00	50.00	0.12	300.38	15.88	6.32	100.34	100.34	102.41
L-CJ-41	Rectangular	CJ-41	CJ-43	91.06	90.90	1	10.00	6.00	145.00	0.11	311.19	15.89	5.85	100.34	100.33	102.41
L-CJ-43	Rectangular	CJ-43	CJ-45	90.90	90.73	1	10.00	6.00	148.00	0.11	361.27	15.89	6.73	100.33	100.32	102.71
L-CJ-45	Rectangular	CJ-45	CJ-46	90.73	90.62	1	10.00	6.00	98.00	0.11	391.63	15.91	7.26	100.32	100.32	102.71
L-CJ-46	Rectangular	CJ-46	CJ-47	90.62	90.57	1	10.00	6.00	48.00	0.10	406.95	15.92	7.55	100.32	100.31	102.71
L-CJ-47	Rectangular	CJ-47	CJ-48	90.57	90.40	1	10.00	6.00	148.00	0.11	409.36	15.91	7.62	100.31	100.31	101.10
L-CJ-48	Rectangular	CJ-48	CJ-49	90.40	90.36	2	6.00	6.00	39.00	0.10	423.90	15.92	6.59	100.31	100.30	101.10
L-CJ-49	Rectangular	CJ-49	CJ-50	90.36	90.24	2	6.00	6.00	108.00	0.11	437.85	15.92	6.85	100.30	100.30	102.24
L-CJ-5	Rectangular	CJ-5	CJ-6	94.93	94.86	1	5.00	4.00	68.00	0.10	77.47	15.81	3.99	100.48	100.48	106.80
L-CJ-50	Rectangular	CJ-50	CJ-51	90.24	90.17	2	6.00	6.00	60.00	0.12	444.30	15.92	7.01	100.30	100.30	102.24
L-CJ-51	Rectangular	CJ-51	CJ-52	90.17	90.07	2	6.00	6.00	86.00	0.12	447.55	15.92	7.12	100.30	100.29	101.81
L-CJ-52	Rectangular	CJ-52	CJ-53	90.07	90.00	2	6.00	6.00	68.00	0.10	455.01	15.92	7.31	100.29	100.29	101.81
L-CJ-53	Rectangular	CJ-53	CJ-53a	90.00	89.95	2	6.00	6.00	45.00	0.11	454.98	15.92	7.39	100.29	100.29	101.81
L-CJ-53a	Rectangular	CJ-53a	CJ-54	89.95	89.87	2	6.00	6.00	73.00	0.11	454.97	15.92	7.46	100.29	100.29	101.90
L-CJ-54	Rectangular	CJ-54	CJ-55	89.87	89.74	2	6.00	6.00	120.00	0.11	454.94	15.93	7.60	100.29	100.28	101.90
L-CJ-55	Rectangular	CJ-55	CJ-56	89.74	89.57	2	6.00	6.00	150.00	0.11	454.89	15.93	7.85	100.28	100.28	102.20
L-CJ-56	Rectangular	CJ-56	CJ-57	89.57	89.41	2	6.00	6.00	150.00	0.11	495.91	15.95	9.06	100.28	100.27	102.20
L-CJ-57	Rectangular	CJ-57	CJ-58	89.41	89.22	2	6.00	6.00	173.00	0.11	495.94	15.95	10.11	100.27	100.26	102.20
L-CJ-58	**Rectangular**	**CJ-58**	**CJ-59**	**87.24**	**87.18**	**2**	**8.00**	**8.00**	**60.00**	**0.10**	**630.46**	**15.94**	**10.54**	**100.26**	**100.26**	**195.50**
L-CJ-6	Rectangular	CJ-6	CJ-6a	94.86	94.83	1	5.00	4.00	25.00	0.12	77.22	15.81	3.95	100.48	100.47	106.71
L-CJ-6a	Rectangular	CJ-6a	CJ-7	94.83	94.78	1	5.00	4.00	50.00	0.10	80.37	15.82	4.09	100.47	100.47	195.50
L-CJ-7	Rectangular	CJ-7	CJ-8	94.78	94.70	1	5.00	4.00	73.00	0.11	81.75	15.82	4.12	100.47	100.47	106.83
L-CJ-8	Rectangular	CJ-8	CJ-8a	94.70	94.66	1	5.00	4.00	30.00	0.13	81.83	15.82	4.11	100.47	100.47	107.06
L-CJ-8a	Rectangular	CJ-8a	CJ-9	94.66	94.54	1	5.00	5.00	109.00	0.11	93.89	15.82	4.71	100.47	100.46	195.50
L-CJ-9	Rectangular	CJ-9	CJ-10	94.54	94.50	1	5.00	5.00	40.00	0.10	102.15	15.82	5.12	100.46	100.46	107.07
L-CK-1	Circular	CK-1	CK-2	97.91	97.70	1	0.00	2.00	106.00	0.20	22.00	16.99	6.96	102.81	102.80	102.91
L-CK-2	Circular	CK-2	CK-3	96.81	96.65	1	0.00	2.00	80.00	0.20	46.12	16.78	14.57	102.80	100.33	103.31
L-CK-2a	Circular	BW8-SW	CK-2	97.11	96.81	1	0.00	2.00	60.00	0.50	45.84	15.88	14.37	105.08	102.80	103.31
L-CK-3	Circular	CK-3	CK-4	96.15	96.10	1	0.00	2.50	25.00	0.20	46.81	16.76	9.44	100.33	100.33	102.00
L-CK-4	Circular	CK-4	CK-5	96.10	94.06	1	0.00	2.50	218.00	0.94	51.73	15.75	10.58	100.33	100.33	118.51
L-CK-5	Circular	CK-5	CJ-43	94.06	93.57	1	0.00	2.50	42.00	1.17	51.69	15.75	10.76	100.33	100.33	115.63
L-CK-6	Circular	CK-6	CK-7	115.67	114.11	1	0.00	1.50	150.00	1.04	3.05	16.00	4.27	116.22	114.88	121.66
L-CK-7	Circular	CK-7	CK-4	114.11	112.50	1	0.00	1.50	150.00	1.07	5.67	15.77	6.22	114.88	113.27	120.01
L-CK-8	Circular	CK-8	CJ-45	96.75	94.44	1	0.00	1.50	55.00	4.20	4.59	15.75	8.63	100.32	100.32	119.58
L-CK-9	Circular	CK-9	CJ-47	96.75	94.34	1	0.00	1.50	65.00	3.71	2.86	15.76	7.21	100.31	100.31	121.41
L-CL-1	Circular	CL-1	CL-2	97.02	96.76	1	0.00	1.50	85.00	0.31	5.47	16.00	4.39	100.31	100.31	103.43
L-CL-2	Circular	CL-2	CL-3	96.26	96.19	1	0.00	2.00	47.00	0.15	5.47	16.01	3.07	100.31	100.31	102.26
L-CL-3	Circular	CL-3	CL-8	96.19	95.95	1	0.00	2.00	115.00	0.21	6.75	15.78	4.13	100.31	100.31	102.19
L-CL-4	Circular	CL-4	CL-4a	95.23	94.67	1	0.00	2.00	90.00	0.62	12.30	16.01	6.02	100.31	100.31	123.17
L-CL-4a	Circular	CL-4a	CL-5	94.67	94.11	1	0.00	2.00	90.00	0.62	12.33	16.01	5.88	100.31	100.31	124.50
L-CL-5	Circular	CL-5	CL-6	94.11	93.93	1	0.00	2.50	30.00	0.60	14.55	15.87	6.15	100.31	100.31	123.17
L-CL-6	Circular	CL-6	CJ-48	93.43	90.40	1	0.00	2.50	48.00	6.31	14.55	15.95	3.74	100.31	100.31	101.10
L-CL-7	Circular	CL-7	CJ-50	94.43	93.91	1	0.00	1.50	80.00	0.65	7.67	15.76	5.40	100.30	100.30	124.67
L-CL-8	Circular	CL-8	CL-4	95.95	95.23	1	0.00	2.00	97.00	0.74	8.51	15.79	5.07	100.31	100.31	102.57

Table 3.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (10-Year) - Outfalls 7-8

Model: E127Existing_10.xp & BW8Existing_10.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-CL-9	Circular	CL-9	CL-1	97.24	97.02	1	0.00	1.50	108.00	0.20	-0.19	18.25	0.25	100.31	100.31	102.57
L-CP-1	Circular	CP-1	CJ-53	97.23	93.67	1	0.00	1.50	40.00	8.90	0.14	17.89	0.17	100.29	100.29	103.23
L-CP-2	Circular	CP-2	CJ-54	96.41	93.54	1	0.00	1.50	60.00	4.78	-0.43	17.86	0.30	100.29	100.29	102.41
L-CP-3	Circular	CP-3	CP-2	96.89	96.41	1	0.00	1.50	160.00	0.30	-0.22	18.12	0.24	100.29	100.29	102.89
L-CR-10	Circular	CR-10	CR-10a	89.50	89.15	1	0.00	8.50	32.00	1.09	97.05	15.81	8.90	100.26	100.26	122.03
L-CR-10a	Circular	CR-10a	CR-12	89.15	88.36	1	0.00	8.50	87.00	0.91	103.36	15.81	6.91	100.26	100.26	122.50
L-CR-11	Circular	CR-11	CR-12	96.76	94.86	1	0.00	1.50	180.00	1.06	7.71	15.76	6.64	100.26	100.26	102.76
L-CR-12	Rectangular	CR-12	CR-97	88.36	87.76	1	6.00	6.00	220.00	0.27	143.10	15.80	7.34	100.26	100.26	102.76
L-CR-13	Circular	CR-13	CR-14	96.76	96.65	1	0.00	1.50	130.00	0.08	4.52	16.01	3.57	100.24	100.24	102.26
L-CR-14	Circular	CR-14	CR-16	94.65	94.32	1	0.00	2.00	111.00	0.30	7.06	16.01	3.53	100.24	100.24	102.65
L-CR-15	Circular	CR-15	CR-14	96.57	96.41	1	0.00	1.50	80.00	0.20	-2.40	21.89	2.58	100.24	100.24	102.57
L-CR-16	Circular	CR-16	CR-17	94.32	94.09	1	0.00	2.00	109.00	0.21	9.11	15.78	4.61	100.24	100.24	102.98
L-CR-17	Circular	CR-17	CR-23	91.16	90.99	1	0.00	3.50	80.00	0.21	69.49	15.79	7.06	100.24	100.25	103.30
L-CR-18	Circular	CR-18	CR-17	91.80	91.66	1	0.00	3.00	100.00	0.14	59.41	15.79	8.25	100.23	100.24	103.25
L-CR-18.1	Circular	BW8-SE	CR-18	92.10	91.80	1	0.00	2.50	60.00	0.50	42.14	15.75	8.55	100.23	100.23	103.25
L-CR-19	Circular	CR-19	CR-18	92.32	91.86	1	0.00	3.00	225.00	0.20	19.54	21.61	2.74	100.21	100.23	102.13
L-CR-20	Circular	CR-20	CR-19	92.56	92.32	1	0.00	3.00	125.00	0.19	19.53	21.61	2.74	100.21	100.21	100.73
L-CR-21	Circular	CR-21	CR-20	93.56	92.56	1	0.00	2.00	60.00	1.67	3.46	21.21	1.09	100.21	100.21	99.10
L-CR-22	Circular	CR-22	CR-21	94.55	93.56	1	0.00	2.00	18.00	5.50	2.00	21.62	0.63	100.21	100.21	118.57
L-CR-23	Circular	CR-23	CR-6	90.99	90.75	1	0.00	3.50	125.00	0.19	75.47	15.78	8.04	100.25	100.26	102.50
L-CR-24	Circular	CR-24	CR-23	96.48	95.00	1	0.00	1.50	80.00	1.85	-2.56	21.81	0.99	100.25	100.25	102.48
L-CR-25	Circular	CR-25	CR-23	94.68	94.60	1	0.00	2.00	32.00	0.25	6.15	15.76	4.37	100.25	100.25	125.68
L-CR-27	Circular	CR-27	CR-29	96.06	95.79	1	0.00	1.50	87.00	0.31	6.50	21.64	3.86	100.21	100.20	100.56
L-CR-28	Circular	CR-28	CR-29	94.29	94.02	1	0.00	2.00	85.00	0.32	8.66	15.76	3.74	100.21	100.20	99.10
L-CR-29	Circular	CR-29	CR-30	94.02	93.51	1	0.00	2.00	173.00	0.29	11.96	21.52	4.99	100.20	100.23	100.29
L-CR-3	Circular	CR-3	CR-8	89.96	89.70	1	0.00	7.50	365.00	0.07	9.16	21.85	0.51	100.27	100.27	100.50
L-CR-30	Circular	CR-30	CR-31	93.01	92.50	1	0.00	2.50	170.00	0.30	12.49	15.78	4.75	100.23	100.25	101.06
L-CR-31	Circular	CR-31	CR-45	92.50	92.39	1	0.00	2.50	32.00	0.34	14.07	15.78	5.53	100.25	100.26	101.91
L-CR-32	Circular	CR-32	CR-28	96.04	95.83	1	0.00	1.50	70.00	0.30	5.68	16.01	4.49	100.21	100.21	111.71
L-CR-33	Circular	CR-33	CR-34a	94.20	93.75	1	0.00	2.00	150.00	0.30	4.92	21.18	1.55	100.27	100.27	99.50
L-CR-33a	Circular	CR-33a	CR-33	94.30	94.20	1	0.00	1.50	32.00	0.31	-1.55	21.19	0.78	100.27	100.27	126.50
L-CR-34	Circular	CR-34	CR-34a	94.30	94.20	1	0.00	1.50	32.00	0.31	6.65	15.76	4.99	100.27	100.27	121.50
L-CR-34a	Circular	CR-34a	CR-10a	93.75	93.22	1	0.00	2.00	160.00	0.33	6.57	15.76	4.35	100.27	100.26	99.50
L-CR-35	Circular	CR-35	CR-36	95.95	95.65	1	0.00	1.50	100.00	0.30	5.02	21.77	2.82	100.20	100.20	100.48
L-CR-36	Circular	CR-36	CR-38	95.15	94.90	1	0.00	2.00	125.00	0.20	14.04	21.70	4.44	100.20	100.20	100.15
L-CR-37	Circular	CR-37	CR-38	93.97	93.81	1	0.00	2.00	78.00	0.21	4.35	15.76	2.51	100.20	100.20	113.24
L-CR-38	Circular	CR-38	CR-20	93.31	93.06	1	0.00	2.50	125.00	0.20	20.17	21.62	4.07	100.20	100.21	100.10
L-CR-39	Circular	CR-39	CR-9	116.89	116.68	1	0.00	2.00	71.00	0.30	5.00	15.77	4.03	117.76	117.47	124.20
L-CR-4	Circular	CR-4	CR-3	90.01	89.96	1	0.00	7.00	75.00	0.07	1.21	21.85	0.18	100.27	100.27	195.50
L-CR-40	Circular	CR-40	CR-39	117.01	116.89	1	0.00	2.00	41.00	0.29	5.01	15.76	3.77	117.89	117.76	124.20
L-CR-41	Circular	CR-41	CR-10	114.83	114.29	1	0.00	2.00	186.00	0.29	1.70	15.77	2.81	115.36	114.74	121.83
L-CR-45	Circular	CR-45	CR-12	88.54	88.36	1	0.00	4.50	64.00	0.28	33.13	15.78	4.04	100.26	100.26	102.00
L-CR-5	Circular	CR-5	CR-MH5	96.00	95.90	1	0.00	2.00	45.00	0.22	3.69	15.76	3.62	100.27	100.27	101.10
L-CR-6	Circular	CR-6	CR-8	90.75	90.56	1	0.00	3.50	90.00	0.21	75.49	15.79	8.83	100.26	100.27	103.54
L-CR-8	Circular	CR-8	CR-9	89.70	89.60	1	0.00	7.50	105.00	0.10	87.10	15.80	6.39	100.27	100.26	98.50
L-CR-88	Circular	CR-88	CR-40	117.20	117.01	1	0.00	2.00	65.00	0.29	5.01	15.76	3.73	118.09	117.89	124.20
L-CR-8a	Circular	CR-8a	CR-9	90.35	90.29	1	0.00	3.50	32.00	0.19	-9.63	18.74	0.87	100.27	100.26	98.50
L-CR-9	Circular	CR-9	CR-10	89.60	89.50	1	0.00	7.50	150.00	0.07	95.50	15.81	8.22	100.26	100.26	124.22
L-CR-97	Rectangular	CR-97	CR-98	87.76	87.28	1	9.00	6.00	340.00	0.14	141.94	15.82	4.53	100.26	100.26	102.20
L-CR-98	Rectangular	CR-98	CJ-58	87.28	87.24	1	9.00	6.00	9.00	0.44	141.05	15.83	4.25	100.26	100.26	195.50
L-CR-MH32	Circular	CR-MH32	CR-33a	94.50	94.30	1	0.00	1.50	70.00	0.29	1.94	21.18	1.09	100.27	100.27	111.50
L-CR-MH5	Circular	CR-MH5	CR-3	94.90	89.96	1	0.00	3.00	150.00	3.29	3.68	15.76	1.24	100.27	100.27	100.50
Link552	Rectangular	CK-3H	CC-40	95.67	95.40	1	6.00	3.00	294.00	0.09	-2.94	17.34	0.36	100.42	100.42	102.00
Link553	Circular	CC-56	CJ-26	97.76	95.79	1	0.00	1.50	38.00	5.18	4.48	15.76	9.86	100.38	100.38	121.27
Link551	Circular	SNT01	CC-40	0.00	0.00	1	0.00	2.00	33.00	0.00	0.00	0.00	0.00	97.08	100.41	105.50

Table 3.1-A

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (10-Year) - Outfalls 8A and 8B

Model: BW8South_Exist_10-R1.xp **2/27/2012**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 8A-8B																
L_L-G3	Circular	CI-G3	DI-L25	96.55	96.46	1	0.00	1.50	46.65	0.19	5	15.75	4.28	97.58	97.33	101.92
L_L-L24	Rectangular	DI-L24	DI-L25	94.58	93.31	1	6.00	4.00	749.30	0.17	181	16.18	7.53	99.86	97.31	103.00
L_L-L24	Trapezoidal	DI-L24	DI-L25	102.21	101.80	1	0.00	0.50	749.30	0.00	0	0.00	0.00	97.31	97.31	103.00
L_L-F2	Circular	CI-F2	DI-L24	97.17	97.08	1	0.00	1.50	46.59	0.19	6	15.77	3.73	99.90	99.86	102.69
L_L-L23	Rectangular	MH-L23	DI-L24	95.12	94.58	1	6.00	4.00	326.54	0.16	173	16.25	7.18	100.86	99.86	104.73
L_L-E5	Circular	CI-E5	MH-L23	97.90	97.62	1	0.00	1.50	93.07	0.29	4	15.77	3.06	100.93	100.86	103.80
L_L-L22	Rectangular	MH-L22	MH-L23	95.92	95.12	1	6.00	4.00	105.86	0.14	171	16.25	7.12	101.18	100.86	104.81
L_L-D9	Circular	CI-D9	MH-L22	97.00	96.77	1	0.00	2.50	93.23	0.24	41	15.77	8.25	101.86	101.18	103.53
L_L-L21	Rectangular	L-21	MH-L22	95.41	95.27	1	6.00	4.00	101.78	0.14	146	16.29	6.07	101.38	101.18	104.00
L_L-D8	Circular	CI-D8	CI-D9	97.31	97.00	1	0.00	2.50	51.33	0.18	38	15.77	7.73	102.20	101.86	102.89
L_L-SD4	Natural	SD-4	L-21	96.18	95.41	1	6.00	4.00	67.66	0.28	149	16.29	2.53	101.40	101.38	104.00
L_L-D7	Circular	MH-D7	CI-D8	97.60	97.31	1	0.00	2.50	141.91	0.16	38	15.77	7.72	103.17	102.20	103.58
L_L-C7	Rectangular	CI-C7	SD-4	99.00	98.66	1	4.00	2.00	119.85	0.50	16	15.93	4.62	101.43	101.40	102.60
L_L-SD3	Natural	SD-3	SD-4	98.64	96.18	1	4.00	0.00	826.00	0.08	126	15.89	2.50	101.64	101.40	104.00
L_L-D6	Circular	CI-D6	MH-D7	98.26	97.60	1	0.00	2.50	99.66	0.33	38	15.77	7.70	103.85	103.17	103.21
L_L-C5	Rectangular	CI-C5	SD-3	99.29	99.15	1	4.00	2.00	80.65	0.17	11	15.75	1.47	101.64	101.64	103.00
L_L-SD2	Natural	SD-2	SD-3	99.03	98.64	1	4.00	0.00	191.00	0.32	118	15.90	2.60	101.84	101.64	104.46
L_L-B9	Rectangular	CI-B9	SD-2	99.87	99.39	1	4.00	2.00	91.29	0.13	9	16.00	1.16	101.85	101.84	104.10
L_L-SD1	Natural	SD-1	SD-2	100.24	99.03	1	4.00	0.00	597.00	0.11	109	16.01	2.36	102.81	101.84	105.12
L_L-A12	Rectangular	CI-A12	SD-1	100.53	100.41	1	4.00	2.00	89.19	0.14	22	15.75	2.73	102.87	102.81	105.11
L_L-B12	Rectangular	CI-B12	SD-1	100.51	100.42	1	4.00	2.00	88.58	0.10	91	16.06	11.28	104.28	102.81	104.88
L_L-A10	Rectangular	DI-A10	CI-A12	100.84	100.53	1	4.00	2.00	312.29	0.10	11	15.75	1.32	102.94	102.87	104.00
L_L-OFFB12	Rectangular	Off-B12	CI-B12	100.53	100.51	1	4.00	2.00	24.70	0.08	89	16.00	11.02	104.68	104.28	104.88
L_L-B10	Rectangular	DI-B10	CI-B12	100.70	100.52	1	4.00	2.00	305.74	0.06	5	16.27	1.39	104.30	104.28	104.00
L_L-A7	Rectangular	CI-A7	DI-R13	96.31	96.22	1	3.00	2.00	62.78	0.14	5	15.75	2.45	97.32	97.31	101.23
Link1	Circular	DI-R12	MH-D7	0.05	0.00	1	0.00	0.05	10.00	0.00	0	0.00	0.00	0.00	0.00	102.60
L_L-R12	Rectangular	DI-R12	DI-R13	97.27	96.22	1	5.00	2.00	707.92	0.15	20	16.01	3.70	98.38	97.31	102.60
L_L-R12	Trapezoidal	DI-R12	DI-R13	102.10	101.13	1	0.00	0.50	707.92	0.00	0	0.00	0.00	97.31	97.31	102.60
L_L-R11	Rectangular	CI-R11	DI-R12	97.34	97.27	1	3	2	59.154	0.118	11	16.002	3.33	98.476	98.381	101.93

Table 4.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (10-Year) - Outfalls 9-16

Model: 10YR_US290_SegB_EX_A&AA.xp & 10YR_US290_SegB_EX_B-G.› 7/12/2011

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 9-10																
L_E117-OUT	**Natural**	**AA-OUT1**	**E117-OUT**	**78.62**	**78.50**	**1.00**	**0.00**	**0.00**	**35.00**	**0.34**	**1452**	**17.31**	**2.26**	**93.13**	**93.13**	**110.48**
L_CI-34	Circular	CI-34	CI-35	91.75	91.42	1.00	0.00	2.50	250.00	0.13	25	15.75	5.11	99.46	98.90	99.22
L_CI-35	Circular	CI-35	MHI-21	91.42	91.30	1.00	0.00	2.50	57.00	0.21	42	15.75	8.55	98.90	98.65	98.40
L_CI-36	Circular	CI-36	CI-37	91.38	91.00	1.00	0.00	2.50	251.00	0.15	5	15.75	0.98	97.65	97.65	99.02
L_CI-37	Circular	CI-37	MHI-22	91.00	90.87	1.00	0.00	2.50	64.00	0.20	6	15.75	1.27	97.65	97.64	98.40
L_CI-38	Circular	CI-38	MHI-24	90.40	90.34	1.00	0.00	2.50	50.00	0.12	89	16.17	17.94	99.36	97.22	97.77
L_CI-39	Circular	CI-39	MHI-23	90.71	90.63	1.00	0.00	2.50	66.00	0.12	7	17.01	1.34	97.24	97.23	97.55
L_CI-40	Circular	CI-40	JCT-40	90.13	90.02	1.00	0.00	1.50	50.00	0.22	2	16.98	1.27	96.25	95.84	97.22
L_CI-41	Circular	CI-41	CI-42	90.06	89.75	1.00	0.00	2.50	281.00	0.11	24	15.68	5.00	95.60	95.36	97.05
L_CI-42	Circular	CI-42	MHI-25	89.25	89.19	1.00	0.00	3.00	53.00	0.11	33	15.68	4.98	95.36	95.33	96.50
L_CI-43	Circular	CI-43	MHI-26	89.57	87.43	1.00	0.00	2.50	83.00	2.58	32	17.20	9.25	95.30	95.17	96.68
L_CI-44	Circular	CI-44	MHI-28	89.59	89.51	1.00	0.00	2.00	56.00	0.14	14	16.06	4.83	94.85	94.75	95.69
L_CI-45	Circular	CI-45	MHI-27	89.87	89.77	1.00	0.00	2.00	76.00	0.13	8	16.01	3.78	94.80	94.70	95.85
L_CI-46	Circular	CI-46	MHI-30	88.84	88.72	1.00	0.00	2.50	54.00	0.22	11	16.01	3.61	94.51	94.51	95.05
L_CI-47	Circular	CI-47	MHI-29	90.08	89.99	1.00	0.00	1.50	91.00	0.10	16	15.70	8.78	97.40	95.99	95.23
L_CI-48	Circular	CI-48	MHI-32	89.46	89.39	1.00	0.00	1.50	65.00	0.11	5	17.73	2.84	94.42	94.23	94.42
L_CI-49	Circular	CI-49	MHI-31	89.84	89.65	1.00	0.00	1.50	86.00	0.22	4	16.00	2.76	94.24	94.24	94.52
L_CI-50	Circular	CI-50	MHI-34	88.17	88.11	1.00	0.00	2.50	54.00	0.11	36	17.74	7.33	94.10	94.06	93.77
L_CI-51	Circular	CI-51	MHI-33	89.48	89.37	1.00	0.00	1.50	51.00	0.22	11	17.98	6.19	94.10	94.08	93.77
L_CI-52	Circular	CI-52	JCT-52	87.52	87.47	1.00	0.00	1.50	46.00	0.11	8	17.74	4.51	93.98	93.97	93.42
L_CI-53	Circular	CI-53	MHI-36	88.66	88.55	1.00	0.00	1.50	56.00	0.20	10	18.56	5.31	93.73	93.73	93.22
L_CI-54	Circular	CI-54	MHI-35	88.97	88.86	1.00	0.00	1.50	51.00	0.22	9	18.61	4.94	93.75	93.74	93.22
L_CI-54A	Circular	CI-54A	CI-54B	87.71	87.66	1.00	0.00	1.50	50.00	0.10	7	19.38	3.64	93.25	93.25	92.53
L_CI-54B	Circular	CI-54B	CI-54BX	87.16	86.81	1.00	0.00	2.00	250.00	0.14	9	16.03	3.93	93.25	93.24	92.49
L_E117-6	Natural	CI-54BX	MHI-38X	78.69	78.59	1.00	0.00	0.00	72.00	0.14	1217	17.29	1.59	**93.24**	93.23	115.44
L_CI-54C	Circular	CI-54C	CI-54BX	88.04	87.54	1.00	0.00	1.50	155.00	0.32	5	16.01	3.54	93.23	93.24	92.85
L_CI-54D	Circular	CI-54D	CI-54C	88.09	88.04	1.00	0.00	1.50	50.00	0.10	-4	16.72	1.38	93.23	93.23	92.36
L_CI-55	Circular	CI-55	CI-56A	87.92	87.66	1.00	0.00	1.50	151.00	0.17	9	19.26	5.10	93.52	93.51	93.14
L_CI-56A	Circular	CI-56A	MHI-37	87.16	87.07	1.00	0.00	2.00	49.00	0.18	21	19.17	6.47	93.51	93.51	92.77
L_CI-56B	Circular	CI-56B	JCT-56B	85.16	85.11	1.00	0.00	1.50	51.00	0.10	-5	16.77	1.86	93.43	93.43	92.40
L_CI-57	Circular	CI-57	CI-58	87.39	87.18	1.00	0.00	1.50	95.00	0.22	10	19.80	5.39	93.15	93.14	92.64
L_CI-58	Circular	CI-58	MH-7A	83.56	83.00	1.00	0.00	4.00	222.00	0.25	10	19.72	0.79	93.14	93.14	92.40
L_CI-59	Circular	CI-59	MH-8	86.38	86.23	1.00	0.00	1.50	74.00	0.20	-5	16.76	3.67	93.14	93.14	91.89
L_CI-59A	Circular	CI-59A	MH-7A	87.33	87.26	1.00	0.00	1.50	36.00	0.19	12	19.71	6.70	93.14	93.14	92.20
L_CI-60	Circular	CI-60	CI-61	87.83	87.63	1.00	0.00	1.50	198.00	0.10	9	20.15	4.84	93.16	93.14	92.62
L_CI-61	Circular	CI-61	CI-62	87.13	87.00	1.00	0.00	2.00	129.00	0.10	13	20.14	4.05	93.14	93.14	92.15
L_CI-62	Circular	CI-62	MH-10	87.00	86.93	1.00	0.00	2.00	29.00	0.24	13	20.05	4.47	93.14	93.14	91.87
L_CI-62A	Circular	CI-62A	MH-10A	87.33	87.25	1.00	0.00	1.50	40.00	0.20	10	20.05	5.80	93.15	93.15	92.20
L_CI-63	Circular	CI-63	CI-64	87.46	87.15	1.00	0.00	1.50	106.00	0.29	7	19.64	3.99	93.19	93.17	92.50
L_CI-64	Circular	CI-64	MH-9	86.65	86.57	1.00	0.00	2.00	46.00	0.17	9	20.00	3.49	93.17	93.17	92.15
L_CI-65	Circular	CI-65	MHI-39	86.03	85.97	1.00	0.00	2.50	50.00	0.12	5	20.20	1.76	93.17	93.17	93.53
L_CI-66	Circular	CI-66	MH-11	88.00	87.95	1.00	0.00	1.50	29.00	0.17	3	20.00	2.96	93.16	93.16	93.05
L_DI-10	Circular	DI-10	CI-45	89.92	89.87	1.00	0.00	2.00	50.00	0.10	7	17.20	3.19	94.72	94.80	93.50
L_DI-11	Circular	DI-11	MHI-27	89.37	89.27	1.00	0.00	2.50	90.00	0.11	12	16.00	3.46	94.71	94.70	94.00
L_DI-12	Circular	DI-12	CI-46	88.95	88.84	1.00	0.00	2.50	52.00	0.21	9	17.21	3.33	94.46	94.51	92.30
L_DI-12A	Circular	DI-12A	MHI-38	87.00	86.87	1.00	0.00	2.00	65.00	0.20	-13	16.52	1.38	93.23	93.22	91.50
L_DI-12C	Circular	DI-12C	JCT-12C	81.49	81.25	1.00	0.00	3.00	86.00	0.28	15	21.90	2.91	93.40	93.38	91.53
L_DI-12C2	Circular	DI-12C2	DI-12C	89.42	88.94	1.00	0.00	1.50	240.00	0.20	15	21.90	8.58	95.34	93.40	94.00
L_DI-12D	Circular	DI-12D	MHI-37X	88.56	87.91	1.00	0.00	2.00	54.00	1.20	7	15.94	5.12	93.23	93.23	92.36
L_DI-12D2	Circular	DI-12D2	DI-12D	90.10	89.54	1.00	0.00	1.50	280.00	0.20	7	15.93	4.68	93.25	93.23	93.50
L_DI-5	Circular	DI-5	CI-41	90.68	90.56	1.00	0.00	2.00	48.00	0.25	23	15.68	7.18	95.79	95.60	95.00
L_DI-6	Circular	DI-6	CI-43	89.70	89.57	1.00	0.00	2.50	77.00	0.17	32	17.20	8.06	95.34	95.30	94.10
L_DI-7	Circular	DI-7	MHI-26	90.06	89.93	1.00	0.00	2.00	116.00	0.11	11	15.75	4.09	95.15	95.17	94.30
L_DI-8	Circular	DI-8	CI-42	90.37	90.25	1.00	0.00	2.00	113.00	0.11	8	15.75	2.90	95.31	95.36	95.00
L_DI-9	Circular	DI-9	CI-44	89.73	89.59	1.00	0.00	2.00	125.00	0.11	12	16.07	3.91	94.72	94.85	92.50

Table 4.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (10-Year) - Outfalls 9-16

Model: 10YR_US290_SegB_EX_A&AA.xp & 10YR_US290_SegB_EX_B-G.› 7/12/2011

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_E117-3	Natural	E117-3	MHI-37X	78.53	78.81	1.00	0.00	0.00	42.00	-0.67	1223	17.30	0.93	93.23	93.23	112.44
L_E117-4	Natural	E117-4	E117-3	78.59	78.53	1.00	0.00	0.00	263.00	0.02	1221	17.30	0.91	93.23	93.23	115.44
L_GES-1	Circular	GES-1	GES-2	81.87	81.40	1.00	0.00	4.00	238.00	0.20	122	15.92	9.60	95.14	94.58	93.50
L_GES-2	Circular	GES-2	GES-3	81.40	80.91	1.00	0.00	4.00	240.00	0.20	122	15.92	9.62	94.58	94.06	93.50
L_GES-3	Circular	GES-3	GES-4	80.41	79.47	1.00	0.00	4.50	668.00	0.14	122	15.91	7.62	94.06	93.31	93.00
L_GES-4	Circular	GES-4	CI-54BX	79.47	78.81	1.00	0.00	4.50	22.00	3.00	122	15.91	7.63	93.31	93.24	90.80
Link732	Circular	JCT-12C	MHI-37X	81.25	81.22	1.00	0.00	7.50	21.00	0.14	387	16.02	9.31	93.38	93.23	93.00
L_JCT-40	Circular	JCT-40	MHI-26	87.75	87.43	1.00	0.00	4.50	176.00	0.18	147	16.10	9.22	95.84	95.17	95.42
L_MHI-34	Circular	JCT-52	MHI-36	83.47	83.05	1.00	0.00	7.00	300.00	0.14	352	16.01	8.77	93.97	93.73	93.54
Link681	Circular	JCT-56B	JCT-12C	81.36	81.25	1.00	0.00	7.50	79.00	0.14	374	16.02	8.18	93.43	93.38	92.50
L_MH-10	Circular	MH-10	MH-8	82.11	81.79	1.00	0.00	4.00	161.00	0.20	32	16.00	2.53	93.14	93.14	91.92
Link709	Circular	MH-10A	MH-10	86.11	86.06	1.00	0.00	2.00	25.00	0.20	16	20.05	4.89	93.15	93.14	91.55
L_MH-11	Circular	MH-11	MH-10	84.64	83.11	1.00	0.00	3.00	529.00	0.29	19	15.77	3.37	93.16	93.14	93.50
L_MH-6	Circular	MH-6	MHI-28	85.68	85.51	1.00	0.00	6.00	143.00	0.12	223	16.10	7.89	94.92	94.75	98.00
L_MH-7	Circular	MH-7	MH-8	82.93	82.72	1.00	0.00	4.00	97.00	0.22	15	19.71	1.19	93.14	93.14	92.50
Link711	Circular	MH-7A	MH-7	83.00	82.93	1.00	0.00	4.00	35.00	0.20	15	19.71	1.19	93.14	93.14	93.40
L_MH-8	Circular	MH-8	AA-OUT1	80.29	80.00	1.00	0.00	5.50	164.00	0.18	-43	16.76	1.75	93.14	93.13	91.80
Link710	Circular	MH-9	MH-10A	86.57	86.11	1.00	0.00	2.00	207.00	0.22	9	20.00	3.65	93.17	93.15	92.30
L_MHI-21	Circular	MHI-21	MHI-22	91.30	90.87	1.00	0.00	2.50	155.00	0.28	45	17.01	9.17	98.65	97.64	97.25
L_MHI-22	Circular	MHI-22	MHI-24	89.87	89.34	1.00	0.00	3.50	250.00	0.21	52	15.63	5.45	97.64	97.22	97.80
L_MHI-23	Circular	MHI-23	MHI-24	90.63	90.34	1.00	0.00	2.50	170.00	0.17	14	16.97	2.73	97.23	97.22	96.50
L_MHI-24	Circular	MHI-24	JCT-40	88.34	87.75	1.00	0.00	4.50	324.00	0.18	146	16.10	9.11	97.22	95.84	97.55
L_MHI-25	Circular	MHI-25	MHI-26	89.19	88.93	1.00	0.00	3.00	164.00	0.16	36	15.68	5.79	95.33	95.17	95.51
L_MHI-26	Circular	MHI-26	MH-6	85.93	85.68	1.00	0.00	6.00	195.00	0.13	224	15.68	7.88	95.17	94.92	96.30
L_MHI-27	Circular	MHI-27	MHI-28	88.77	88.51	1.00	0.00	3.00	161.00	0.16	23	16.01	3.98	94.70	94.75	94.67
L_MHI-28	Circular	MHI-28	MHI-30	85.01	84.72	1.00	0.00	6.50	235.00	0.12	262	16.10	7.80	94.75	94.51	95.47
L_MHI-29	Circular	MHI-29	MHI-30	89.99	89.72	1.00	0.00	1.50	161.00	0.17	15	15.65	8.67	95.99	94.51	94.09
L_MHI-30	Circular	MHI-30	MHI-32	84.22	83.89	1.00	0.00	7.00	301.00	0.11	288	16.09	7.20	94.51	94.23	97.47
L_MHI-31	Circular	MHI-31	MHI-32	89.15	88.89	1.00	0.00	2.00	170.00	0.15	8	16.00	2.54	94.24	94.23	93.31
L_MHI-32	Circular	MHI-32	MHI-34	83.89	83.61	1.00	0.00	7.00	230.00	0.12	302	16.09	7.50	94.23	94.06	94.12
L_MHI-33	Circular	MHI-33	MHI-34	88.87	88.61	1.00	0.00	2.00	171.00	0.15	12	16.00	3.96	94.08	94.06	92.82
Link713	Circular	MHI-34	JCT-52	83.61	83.47	1.00	0.00	7.00	102.00	0.14	351	16.01	8.70	94.06	93.97	93.54
L_MHI-35	Circular	MHI-35	MHI-36	88.36	88.05	1.00	0.00	2.00	207.00	0.15	7	15.76	3.51	93.74	93.73	92.40
L_MHI-36	Circular	MHI-36	MHI-37	82.05	81.57	1.00	0.00	7.50	400.00	0.12	365	16.01	7.91	93.73	93.51	92.54
L_MHI-36A	Circular	MHI-36A	CI-54B	87.71	87.66	1.00	0.00	1.50	53.00	0.09	7	19.39	3.65	93.25	93.25	92.56
L_MHI-37	Circular	MHI-37	JCT-56B	81.57	81.36	1.00	0.00	7.50	139.00	0.15	373	16.02	8.13	93.51	93.43	92.54
L_E117-2	Natural	MHI-37X	MHI-56X	78.81	79.61	1.00	0.00	0.00	84.00	-0.95	1408	17.30	2.87	93.23	93.22	112.44
L_MHI-38	Circular	MHI-38	MHI-38X	86.37	85.71	1.00	0.00	2.50	285.00	0.23	-13	16.78	3.45	93.22	93.23	92.25
L_E117-5	Natural	MHI-38X	E117-4	78.59	78.59	1.00	0.00	0.00	47.00	0.00	1219	17.31	1.74	93.23	93.23	115.44
L_MHI-39	Circular	MHI-39	MHI-40	85.47	85.25	1.00	0.00	3.00	181.00	0.12	10	16.01	3.43	93.17	93.17	92.33
L_MHI-40	Circular	MHI-40	MH-11	84.75	84.70	1.00	0.00	3.00	24.00	0.21	18	15.77	4.74	93.17	93.16	92.23
L_E117-1	Natural	MHI-56X	AA-OUT1	79.61	78.62	1.00	0.00	0.00	293.00	0.34	1426	17.30	3.81	93.22	93.13	112.44
Outfalls 11																
L-B-1	**Natural**	**B-1**	**SYS-B-OUT**	**81.21**	**79.26**	**1.00**	**0.00**	**0.00**	**330.00**	**0.59**	**414**	**16.29**	**6.37**	**90.39**	**90.30**	**93.00**
L-B-2	Natural	B-2	B-1	82.18	81.21	1.00	0.00	0.00	168.00	0.58	420	16.33	6.00	90.49	90.39	93.97
L-B-3	Natural	B-3	B-2	82.34	82.18	1.00	0.00	0.00	89.00	0.18	422	16.35	3.26	90.51	90.49	92.15
L-B-4	Natural	B-4	B-3	83.20	82.34	1.00	0.00	6.80	314.00	0.27	358	16.79	1.81	90.56	90.51	92.00
L-B-5	Natural	B-5	B-4	83.39	83.20	1.00	0.00	0.00	60.00	0.32	364	16.79	1.62	**90.56**	90.56	93.26
L-B-6	Natural	B-6	B-5	83.86	83.39	1.00	0.00	0.00	238.00	0.20	366	16.76	5.36	90.91	90.56	93.73
L_CI-67	Circular	CI-67	MHI-41	87.02	86.96	1.00	0.00	2.50	47.00	0.13	3	16.02	0.91	90.55	90.55	93.09
L_CI-68	Circular	CI-68	MHI-42	87.61	87.50	1.00	0.00	1.50	52.00	0.21	3	15.78	3.18	90.55	90.54	92.98
L_CI-69	Circular	CI-69	CI-70	87.24	87.00	1.00	0.00	1.50	240.00	0.10	2	15.75	2.09	90.62	90.53	91.57
L_CI-70	Circular	CI-70	MHI-43	86.50	86.45	1.00	0.00	2.00	49.00	0.10	4	15.75	2.79	90.53	90.51	91.86
L_CI-71	Circular	CI-71	CI-72	87.04	86.79	1.00	0.00	1.50	221.00	0.11	2	16.01	1.47	90.53	90.52	92.45
L_CI-72	Circular	CI-72	MHI-44	86.29	85.23	1.00	0.00	2.00	55.00	1.93	3	15.79	1.00	90.52	90.51	91.78
L_CI-73	Circular	CI-73	MHI-45	86.81	86.28	1.00	0.00	1.50	232.00	0.23	3	15.76	2.61	90.51	90.51	90.97
L_CI-73A	Circular	CI-73A	CI-75	85.81	85.59	1.00	0.00	1.50	102.00	0.22	2	15.76	1.16	90.51	90.51	90.42

Table 4.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (10-Year) - Outfalls 9-16

Model: 10YR_US290_SegB_EX_A&AA.xp & 10YR_US290_SegB_EX_B-G.› 7/12/2011

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_CI-74	Circular	CI-74	MHI-45	86.38	86.28	1.00	0.00	1.50	50.00	0.20	2	15.76	2.62	90.51	90.51	90.97
L_CI-75	Circular	CI-75	CI-76	85.59	85.36	1.00	0.00	1.50	100.00	0.23	3	15.77	1.47	90.51	90.51	90.59
L_CI-76	Circular	CI-76	MHI-46	84.86	84.79	1.00	0.00	2.00	44.00	0.16	4	16.01	1.20	90.51	90.51	90.81
L_CI-77A	Circular	CI-77A	CI-77B	85.58	85.32	1.00	0.00	1.50	150.00	0.17	7	20.93	4.04	90.52	90.51	90.23
L_CI-77B	Circular	CI-77B	CI-78	84.82	84.56	1.00	0.00	2.00	148.00	0.18	8	20.52	2.44	90.51	90.51	89.81
L_CI-78	Circular	CI-78	MHI-47	84.56	84.46	1.00	0.00	2.00	36.00	0.28	8	20.52	2.44	90.51	90.51	90.24
L_CI-78A	Circular	CI-78A	JCT-78A	84.35	83.99	1.00	0.00	1.50	34.00	1.06	2	15.75	1.00	90.51	90.51	90.72
L_CI-79	Circular	CI-79	CI-80	84.61	84.51	1.00	0.00	1.50	100.00	0.10	1	16.00	0.73	90.52	90.52	90.87
L_CI-80	Circular	CI-80	MHI-48	84.01	83.95	1.00	0.00	2.00	50.00	0.12	2	16.00	0.52	90.52	90.52	90.59
L_CI-81	Circular	CI-81	MHI-49	85.01	83.25	1.00	0.00	1.50	51.00	3.45	2	16.00	1.34	90.52	90.52	91.08
L_CI-81A	Circular	CI-81A	CI-81	85.08	85.01	1.00	0.00	1.50	50.00	0.14	1	16.00	0.61	90.52	90.52	91.21
L_CI-82	Circular	CI-82	MHI-50	85.26	85.21	1.00	0.00	1.50	51.00	0.10	3	15.76	1.54	90.52	90.51	91.00
Link687	Circular	CI-82A	MHI-50A	85.71	85.66	1.00	0.00	1.50	50.00	0.10	2	15.76	1.51	90.52	90.52	90.58
L_JCT-78A	Circular	JCT-78A	B-3	81.46	80.94	1.00	0.00	4.50	200.00	0.26	76	15.79	4.76	90.51	90.51	90.06
L_MH-B1	Circular	MH-B1	MH-B2	80.92	80.76	1.00	0.00	3.00	115.47	0.14	43	16.00	5.96	90.52	90.52	92.29
L_MH-B2	Circular	MH-B2	MHI-50S	80.76	80.55	1.00	0.00	3.00	148.17	0.14	43	16.00	5.97	90.52	90.52	91.38
L_MHI-41	Circular	MHI-41	MHI-42	86.96	86.50	1.00	0.00	2.50	204.00	0.23	10	15.79	3.72	90.55	90.54	92.06
L_MHI-42	Circular	MHI-42	MHI-44	86.00	85.23	1.00	0.00	3.00	365.00	0.21	20	15.79	3.22	90.54	90.51	91.91
L_MHI-43	Circular	MHI-43	MHI-44	85.95	85.73	1.00	0.00	2.50	183.00	0.12	15	16.00	3.08	90.51	90.51	90.50
L_MHI-44	Circular	MHI-44	MHI-45	84.23	83.78	1.00	0.00	4.00	301.00	0.15	41	15.79	3.24	90.51	90.51	90.76
L_MHI-45	Circular	MHI-45	MHI-47	83.78	82.35	1.00	0.00	4.00	550.00	0.26	55	15.79	4.38	90.51	90.51	89.86
L_MHI-46	Circular	MHI-46	MHI-47	83.54	83.21	1.00	0.00	2.50	252.00	0.13	11	16.00	2.32	90.51	90.51	88.76
L_MHI-47	Circular	MHI-47	JCT-78A	81.85	81.46	1.00	0.00	4.50	149.00	0.26	74	15.79	4.65	90.51	90.51	89.06
L_MHI-48	Circular	MHI-48	MHI-49	83.45	83.25	1.00	0.00	2.50	200.00	0.10	8	15.76	1.72	90.52	90.52	88.36
L_MHI-49	Circular	MHI-49	MHI-50	82.75	82.53	1.00	0.00	3.00	180.00	0.12	17	15.76	2.42	90.52	90.51	88.81
L_MHI-50	Circular	MHI-50	B-3	79.27	78.64	1.00	0.00	4.00	249.00	0.25	74	15.76	5.84	90.51	90.51	89.06
Link688	Circular	MHI-50A	MHI-50	85.66	85.26	1.00	0.00	1.50	200.00	0.20	4	15.76	2.34	90.52	90.51	89.31
Link741	Circular	MHI-50S	MHI-50	80.26	79.77	1.00	0.00	3.50	371.49	0.13	43	16.00	4.40	90.52	90.51	91.50
Outfalls 12																
L-C-1	**Natural**	**C-1**	**SYS-C-OUT**	**82.44**	**82.31**	**1.00**	**0.00**	**0.00**	**266.00**	**0.05**	**219**	**16.01**	**4.07**	**89.83**	**89.83**	**95.00**
L-C-2	Natural	C-2	C-1	77.88	82.44	1.00	6.00	0.00	35.00	-13.03	219	16.00	1.59	89.83	89.83	90.50
Link714	Circular	CI-83	MHI-51	85.63	85.58	1.00	0.00	1.50	50.00	0.10	4	20.23	2.02	89.90	89.84	90.98
L_CI-84	Circular	CI-84	MHI-52	85.43	85.33	1.00	0.00	1.50	50.00	0.20	3	15.77	3.06	89.84	89.84	90.34
L_CI-85	Circular	CI-85	CI-86	84.59	84.42	1.00	0.00	1.50	150.00	0.11	1	16.01	0.48	89.85	89.84	90.31
L_CI-86	Circular	CI-86	CI-87	83.92	83.79	1.00	0.00	2.00	109.00	0.12	2	16.00	0.69	89.84	89.84	89.96
L_CI-87	Circular	CI-87	MHI-53	80.65	80.53	1.00	0.00	4.50	55.00	0.22	142	16.00	8.92	89.84	89.84	90.20
L_CI-88	Circular	CI-88	JCT-54	82.06	81.96	1.00	0.00	1.50	95.00	0.11	1	15.75	1.29	89.83	89.83	90.02
L_CI-89	Circular	CI-89	JCT-54	81.53	81.46	1.00	0.00	2.00	55.00	0.13	4	15.75	1.80	89.83	89.83	89.74
L_CI-90	Circular	CI-90	CI-89	82.13	82.03	1.00	0.00	1.50	100.00	0.10	1	15.75	1.35	89.83	89.83	89.95
L_CI-91	Circular	CI-91	CI-92	84.91	84.80	1.00	0.00	1.50	100.00	0.11	9	20.64	4.87	89.85	89.84	89.64
L_CI-92	Circular	CI-92	MH-13	84.30	84.26	1.00	0.00	2.00	32.00	0.12	23	19.96	7.10	89.84	89.87	88.71
L_CI-93	Circular	CI-93	CI-94	83.05	82.88	1.00	0.00	3.50	100.00	0.17	28	20.57	2.88	89.84	89.84	89.30
L_CI-94	Circular	CI-94	MH-13	82.38	82.00	1.00	0.00	4.00	251.00	0.15	22	16.01	1.73	89.84	89.87	88.97
L_CI-95A	Circular	CI-95A	MHI-55	84.91	84.83	1.00	0.00	1.50	38.00	0.21	10	20.47	5.48	89.85	89.85	89.63
L_CI-96A	Circular	CI-96A	MHI-56	84.66	84.58	1.00	0.00	1.50	41.00	0.20	12	20.33	6.70	89.86	89.84	89.68
L-JCT-54	Circular	JCT-54	MHI-54X	77.96	77.88	1.00	0.00	6.50	54.00	0.15	219	16.00	6.60	89.83	89.83	88.96
Link691	Circular	MH-12	MHI-54	80.78	79.80	1.00	0.00	4.00	327.00	0.30	47	16.01	3.75	89.84	89.83	90.16
L_MH-13	Circular	MH-13	MHI-56	82.00	81.68	1.00	0.00	4.00	200.00	0.16	30	20.19	2.41	89.87	89.84	89.69
L_CI-83	Circular	MHI-51	MHI-52	85.08	84.83	1.00	0.00	2.00	182.00	0.14	9	15.77	3.06	89.84	89.84	89.46
L_MHI-52	Circular	MHI-52	MHI-54	84.33	83.67	1.00	0.00	2.50	274.00	0.24	21	15.77	4.11	89.84	89.83	88.96
L_MHI-53	Circular	MHI-53	MHI-54	80.53	80.05	1.00	0.00	4.50	213.00	0.23	146	16.00	9.17	89.84	89.83	89.06
L_MHI-54	Circular	MHI-54	JCT-54	78.05	77.96	1.00	0.00	6.50	57.00	0.16	215	16.00	6.48	89.83	89.83	88.96
L-MHI-54X	Natural	MHI-54X	C-2	77.88	77.88	1.00	0.00	0.00	10.00	0.00	219	16.00	1.07	89.83	89.83	90.50
L_MHI-55	Circular	MHI-55	MHI-56	84.33	83.74	1.00	0.00	2.00	203.00	0.29	12	16.00	3.78	89.85	89.84	88.56
L_MHI-56	Circular	MHI-56	MH-12	81.68	80.78	1.00	0.00	4.00	301.00	0.30	47	16.01	3.75	89.84	89.84	88.46
Outfalls 13																
L_CI-100	Circular	CI-100	MH-16	82.91	82.82	1.00	0.00	1.50	29.00	0.31	5	16.00	4.56	87.79	87.79	87.96
L_CI-100A	Circular	CI-100A	MH-18	81.93	81.73	1.00	0.00	1.50	39.00	0.51	5	16.01	4.64	87.78	87.78	88.26

Table 4.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (10-Year) - Outfalls 9-16

Model: 10YR_US290_SegB_EX_A&AA.xp & 10YR_US290_SegB_EX_B-G.› 7/12/2011

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_CI-100B	Circular	CI-100B	CI-100A	82.01	81.93	1.00	0.00	1.50	50.00	0.16	5	16.00	4.07	87.78	87.78	88.38
L_CI-101	Circular	CI-101	CI-102	82.96	82.70	1.00	0.00	1.50	135.00	0.19	2	16.01	2.98	87.93	87.81	88.18
L_CI-102	Circular	CI-102	MH-19	81.70	81.61	1.00	0.00	2.50	41.00	0.22	7	16.00	3.68	87.81	87.81	87.75
L_CI-102A	Circular	CI-102A	JCT102A	81.79	81.56	1.00	0.00	1.50	95.00	0.24	6	21.23	3.90	87.82	87.82	87.66
L_CI-103	Circular	CI-103	MH-18B	82.91	82.86	1.00	0.00	1.50	29.00	0.17	3	15.75	3.49	87.78	87.78	88.10
L_CI-104	Circular	CI-104	MH-20	82.33	82.28	1.00	0.00	1.50	29.00	0.17	2	16.00	3.13	87.78	87.78	87.38
L_CI-105	Circular	CI-105	MHI-65	82.07	81.96	1.00	0.00	1.50	50.00	0.22	2	15.76	3.34	87.79	87.78	87.12
L_CI-106	Circular	CI-106	MHI-66	82.68	82.62	1.00	0.00	1.50	50.00	0.12	10	22.09	5.78	87.79	87.79	87.59
L_CI-107A	Circular	CI-107A	MHI-61	81.97	81.86	1.00	0.00	1.50	50.00	0.22	10	22.48	5.32	87.79	87.79	87.34
L_CI-107B	Circular	CI-107B	MHI-63	82.08	81.99	1.00	0.00	1.50	50.00	0.18	2	15.76	3.08	87.79	87.79	87.12
L_CI-108	Circular	CI-108	MHI-64	81.96	81.85	1.00	0.00	1.50	61.00	0.18	10	22.52	5.67	87.79	87.79	87.47
L_CI-95B	Circular	CI-95B	MHI-57	84.56	84.50	1.00	0.00	1.50	50.00	0.12	19	16.04	10.65	90.87	89.35	89.49
L_CI-96B	Circular	CI-96B	MH-14	84.28	84.25	1.00	0.00	1.50	29.00	0.10	3	16.00	2.26	88.00	88.00	89.33
L_CI-97	Circular	CI-97	MHI-59	83.76	83.65	1.00	0.00	1.50	50.00	0.22	2	16.00	3.06	87.97	87.92	88.74
L_CI-98	Circular	CI-98	MH-15	83.44	83.38	1.00	0.00	1.50	29.00	0.21	3	16.00	3.52	87.83	87.81	88.49
L_CI-99	Circular	CI-99	CI-100	82.96	82.91	1.00	0.00	1.50	50.00	0.10	1	15.76	1.45	87.79	87.79	88.07
L-D-1	**Rectangular**	**D-1**	**SYS-D-OUT**	**71.66**	**70.96**	**1.00**	**8.00**	**12.00**	**160.00**	**0.44**	**419**	**16.50**	**4.36**	**87.77**	**87.76**	**88.00**
L_JCT102A	Rectangular	JCT102A	JCT-19	72.11	72.06	1.00	8.00	12.00	50.00	0.10	354	16.75	3.68	87.82	87.81	88.04
L_JCT-18A	Rectangular	JCT-18A	MH-18	71.82	71.77	1.00	8.00	12.00	50.00	0.10	417	16.50	4.34	87.79	87.78	87.64
L-JCT-19	Rectangular	JCT-19	JCT-18A	72.06	71.82	1.00	8.00	12.00	245.00	0.10	355	16.75	4.29	87.81	87.79	87.55
L_MH-14	Circular	MH-14	MH-15	83.02	82.51	1.00	0.00	2.50	301.00	0.17	36	16.01	7.77	88.00	87.81	89.38
L_MH-15	Circular	MH-15	MH-16	80.61	80.51	1.00	0.00	3.00	198.00	0.05	53	16.02	7.81	87.81	87.79	88.54
L_MH-16	Circular	MH-16	MH-17	78.12	77.78	1.00	0.00	3.50	140.00	0.24	58	16.01	5.84	87.79	87.79	88.51
L_MH-17	Circular	MH-17	JCT-18A	76.05	75.79	1.00	0.00	3.50	114.00	0.23	58	16.01	5.97	87.79	87.79	88.32
L-MH-18	Rectangular	MH-18	D-1	71.77	71.66	1.00	8.00	12.00	100.00	0.11	419	16.50	4.76	87.78	87.77	87.64
L_MH-18A	Circular	MH-18A	JCT-18A	76.82	75.79	1.00	0.00	3.50	281.00	0.37	47	15.83	4.88	87.78	87.79	88.78
L_MH-18B	Circular	MH-18B	MH-18A	77.57	76.82	1.00	0.00	3.50	217.00	0.35	47	15.83	4.88	87.78	87.78	88.15
L_MH-19	Circular	MH-19	JCT-19	81.61	81.15	1.00	0.00	2.50	174.00	0.26	7	16.01	4.03	87.81	87.81	88.45
L_MH-20	Circular	MH-20	MH-18B	78.82	78.07	1.00	0.00	3.50	251.00	0.30	45	15.84	4.52	87.78	87.78	87.43
L-MH-D2	Rectangular	MH-D2	JCT102A	72.26	72.11	1.00	8.00	12.00	150.00	0.10	353	16.75	3.68	87.83	87.82	88.04
L_MHI-57	Circular	MHI-57	MHI-58	84.00	83.54	1.00	0.00	2.00	184.00	0.25	25	16.35	7.95	89.35	88.12	88.02
L_MHI-58	Circular	MHI-58	MH-14	83.54	83.52	1.00	0.00	2.00	21.00	0.10	33	16.06	10.61	88.12	88.00	87.69
L_MHI-59	Circular	MHI-59	MHI-60	82.65	82.45	1.00	0.00	2.50	182.00	0.11	8	16.01	2.31	87.92	87.82	88.30
L_MHI-60	Circular	MHI-60	MH-15	82.45	82.42	1.00	0.00	2.50	21.00	0.14	14	16.01	3.86	87.82	87.81	88.02
L_MHI-61	Circular	MHI-61	MHI-63	81.36	81.09	1.00	0.00	2.00	100.00	0.27	11	15.76	4.93	87.79	87.79	86.27
L_MHI-62	Circular	MHI-62	MH-20	80.35	80.32	1.00	0.00	2.00	21.00	0.14	8	15.77	4.38	87.78	87.78	86.57
L_MHI-63	Circular	MHI-63	MHI-65	80.09	79.78	1.00	0.00	3.00	182.00	0.17	23	16.01	4.55	87.79	87.78	86.02
L_MHI-64	Circular	MHI-64	MHI-63	81.35	81.09	1.00	0.00	2.00	153.00	0.17	9	16.01	3.40	87.79	87.79	86.40
L_MHI-65	Circular	MHI-65	MH-20	79.02	78.82	1.00	0.00	3.50	102.00	0.20	35	15.83	3.79	87.78	87.78	86.02
L_MHI-66	Circular	MHI-66	MHI-65	82.12	81.92	1.00	0.00	2.00	200.00	0.10	7	16.00	3.63	87.79	87.78	86.92
Outfalls 14																
L_CI-109	Circular	CI-109	CI-110	82.09	81.84	1.00	0.00	1.50	250.00	0.10	1	16.02	1.40	84.18	84.14	87.84
L_CI-110	Circular	CI-110	CI-111	81.34	81.09	1.00	0.00	2.00	250.00	0.10	3	16.02	0.93	84.14	84.10	87.09
L_CI-111	Circular	CI-111	MHI-68	81.09	81.00	1.00	0.00	2.00	45.00	0.20	4	15.76	1.51	84.10	84.08	86.56
L_CI-112A	Circular	CI-112A	CI-112B	81.86	81.61	1.00	0.00	1.50	140.00	0.18	3	16.01	1.99	84.93	84.87	87.37
L_CI-112B	Circular	CI-112B	CI-113	80.11	79.91	1.00	0.00	3.00	184.00	0.11	26	15.76	3.81	84.87	84.60	87.02
L_CI-113	Circular	CI-113	MHI-67	79.91	79.85	1.00	0.00	3.00	47.00	0.13	27	15.76	4.03	84.60	84.52	86.56
L_CI-114	Circular	CI-114	MHI-70	80.52	80.46	1.00	0.00	2.00	50.00	0.12	3	15.76	0.94	83.93	83.93	86.09
L_CI-115	Circular	CI-115	CI-114	81.12	81.02	1.00	0.00	1.50	100.00	0.10	1	15.76	1.02	83.93	83.93	86.30
L_CI-116	Circular	CI-116	MHI-69	80.52	80.46	1.00	0.00	2.00	47.00	0.13	3	15.76	0.94	83.93	83.93	86.09
L_CI-117	Circular	CI-117	CI-116	81.12	81.02	1.00	0.00	1.50	100.00	0.10	1	15.76	1.01	83.93	83.93	86.30
L_CI-118	Circular	CI-118	JCT-72	78.13	78.06	1.00	0.00	1.50	73.00	0.10	1	15.75	0.71	83.93	83.93	86.44
L_CI-119	Circular	CI-119	JCT-72	77.64	77.56	1.00	0.00	2.00	78.00	0.10	3	15.75	1.00	83.93	83.93	85.09
L_CI-120	Circular	CI-120	CI-119	78.29	78.14	1.00	0.00	1.50	150.00	0.10	1	15.75	0.69	83.93	83.93	84.44
Link715	Circular	CI-121	CI-122	80.95	80.85	1.00	0.00	1.50	99.00	0.10	2	15.75	1.09	83.93	83.93	86.31
L_CI-122	Circular	CI-122	MHI-71	77.28	77.20	1.00	0.00	4.00	52.00	0.15	15	15.75	2.99	83.93	83.93	86.09
L_CI-124	Circular	CI-124	MHI-73	81.51	81.41	1.00	0.00	1.50	50.00	0.20	2	15.75	1.79	83.94	83.93	86.06
L_CI-125	Circular	CI-125	MHI-74	81.04	80.95	1.00	0.00	1.50	50.00	0.18	2	15.75	1.34	83.93	83.93	86.06
L_CI-126	Circular	CI-126	MH-24	81.04	80.99	1.00	0.00	1.50	50.00	0.10	6	16.67	3.19	85.75	85.80	84.77
L_CI-127	Circular	CI-127	MHI-75	79.95	79.86	1.00	0.00	3.00	50.00	0.18	45	16.44	6.30	85.61	85.42	85.59

Table 4.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (10-Year) - Outfalls 9-16

Model: 10YR_US290_SegB_EX_A&AA.xp & 10YR_US290_SegB_EX_B-G.› 7/12/2011

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_CI-128	Circular	CI-128	MHI-76	80.54	80.49	1.00	0.00	2.00	47.00	0.11	3	16.82	0.96	84.45	84.45	85.69
L_CI-129	Circular	CI-129	CI-128	81.14	81.04	1.00	0.00	1.50	100.00	0.10	1	16.82	0.82	84.45	84.45	85.81
L_DI-15	Circular	DI-15	MH-21	81.27	81.25	1.00	0.00	1.50	21.00	0.10	13	16.44	6.99	86.90	86.61	84.99
L-E-1	**Natural**	**E-1**	**SYS-E-OUT**	**78.32**	**78.00**	**1.00**	**0.00**	**0.00**	**320.00**	**0.10**	**174**	**15.78**	**3.68**	**83.93**	**83.93**	**91.10**
L-E-2	Natural	E-2	E-1	73.96	78.32	1.00	0.00	0.00	65.00	-6.71	175	15.76	1.17	83.93	83.93	87.00
L_JCT-72	Circular	JCT-72	MHI-72X	74.06	73.96	1.00	0.00	6.50	57.00	0.18	175	15.76	5.26	83.93	83.93	84.68
L_MH-21	Circular	MH-21	MH-22	81.25	81.18	1.00	0.00	1.50	69.00	0.10	13	16.44	7.00	86.61	85.72	86.29
L_MH-22	Circular	MH-22	MHI-71	81.18	80.93	1.00	0.00	1.50	254.00	0.10	13	16.44	7.26	85.72	83.93	85.63
L_MH-23	Circular	MH-23	MHI-72	77.30	76.83	1.00	0.00	4.00	293.00	0.16	65	16.19	5.16	83.93	83.93	83.70
L_MH-24	Circular	MH-24	CI-127	79.99	79.95	1.00	0.00	3.00	35.00	0.11	41	16.44	5.84	85.80	85.61	85.15
L_MHI-67	Circular	MHI-67	MHI-68	79.85	79.47	1.00	0.00	3.00	190.00	0.20	32	15.76	4.53	84.52	84.08	85.29
L_MHI-68	Circular	MHI-68	MHI-70	78.97	78.55	1.00	0.00	3.50	202.00	0.21	43	15.76	4.41	84.08	83.93	85.29
L_MHI-69	Circular	MHI-69	MHI-70	79.96	79.74	1.00	0.00	2.50	183.00	0.12	11	15.75	2.16	83.93	83.93	84.79
L_MHI-70	Circular	MHI-70	MHI-72	78.05	76.66	1.00	0.00	4.00	559.00	0.25	63	15.76	5.00	83.93	83.93	84.79
L_MH-71	Circular	MHI-71	MHI-72	77.20	76.84	1.00	0.00	4.00	186.00	0.19	37	15.75	3.15	83.93	83.93	84.79
L_MHI-72	Circular	MHI-72	JCT-72	74.16	74.06	1.00	0.00	6.50	60.00	0.17	170	15.76	5.13	83.93	83.93	84.68
L-MHI-72X	Natural	MHI-72X	E-2	73.96	73.96	1.00	0.00	0.00	10.00	0.00	175	15.76	0.81	83.93	83.93	87.00
L_MHI-73	Circular	MHI-73	MHI-74	80.91	80.49	1.00	0.00	2.00	182.00	0.23	6	15.75	2.07	83.93	83.93	84.79
L_MHI-74	Circular	MHI-74	MH-23	77.86	77.30	1.00	0.00	4.00	350.00	0.16	65	16.18	5.16	83.93	83.93	84.89
L_MHI-75	Circular	MHI-75	MHI-76	79.36	79.12	1.00	0.00	3.00	186.00	0.13	54	16.44	7.61	85.42	84.45	83.99
L_MHI-76	Circular	MHI-76	MHI-74	78.62	78.36	1.00	0.00	3.50	201.00	0.13	59	16.43	6.14	84.45	83.93	84.19
Outfalls 15																
L_CI-130	Circular	CI-130	CI-131	80.52	80.04	1.00	0.00	1.50	250.00	0.19	2	15.86	2.73	83.24	83.06	85.54
L_CI-131	Circular	CI-131	CI-132	79.54	79.40	1.00	0.00	2.00	100.00	0.14	5	16.02	2.95	83.06	83.01	84.92
L_CI-132	Circular	CI-132	MHI-78	78.90	78.83	1.00	0.00	2.50	61.00	0.11	6	15.79	2.32	83.01	82.98	84.70
L_CI-133	Circular	CI-133	CI-134	80.52	80.04	1.00	0.00	1.50	250.00	0.19	-2	18.85	2.10	83.67	83.24	85.54
L_CI-134	Circular	CI-134	CI-135	79.54	79.40	1.00	0.00	2.00	100.00	0.14	5	16.02	1.70	83.24	83.17	84.92
L_CI-135	Circular	CI-135	MHI-77	78.90	78.78	1.00	0.00	2.50	62.00	0.19	24	15.79	6.03	83.17	83.07	84.70
L_CI-136	Circular	CI-136	CI-135	80.23	79.90	1.00	0.00	1.50	150.00	0.22	-2	19.04	2.14	83.88	83.17	85.05
L_CI-137	Circular	CI-137	JCT137	75.97	75.73	1.00	0.00	1.50	107.00	0.22	2	16.00	1.19	83.24	82.83	85.05
L_CI-138	Circular	CI-138	MH-26	78.07	78.00	1.00	0.00	2.00	29.00	0.24	5	15.80	2.55	83.14	83.07	85.04
L_CI-139	Circular	CI-139	CI-138	78.27	78.07	1.00	0.00	2.00	200.00	0.10	3	15.81	1.33	83.32	83.14	84.54
Link700	Circular	CI-140	CI-139	78.99	78.77	1.00	0.00	1.50	200.00	0.11	-2	18.99	2.29	83.42	83.32	84.04
L_CI-141	Circular	CI-141	MH-28	78.79	78.68	1.00	0.00	1.50	39.00	0.28	3	16.00	3.24	83.15	83.01	83.84
L_CI-142	Circular	CI-142	CI-143	80.02	79.62	1.00	0.00	1.50	178.00	0.22	3	16.01	3.20	83.33	82.99	85.04
L_CI-143	Circular	CI-143	MH-27	77.62	77.42	1.00	0.00	3.50	130.00	0.15	8	15.80	1.31	82.99	83.01	84.62
L_CI-144	Circular	CI-144	MH-29	79.12	79.07	1.00	0.00	2.00	49.00	0.10	5	16.00	2.64	83.12	83.09	84.83
L_CI-145	Circular	CI-145	CI-144	79.74	79.62	1.00	0.00	1.50	116.00	0.10	1	18.81	1.60	83.25	83.12	85.09
L_CI-146	Circular	CI-146	MH-30	78.67	78.40	1.00	0.00	2.00	158.00	0.17	6	16.01	2.90	82.98	82.98	82.95
L_CI-147	Circular	CI-147	CI-146	79.41	79.18	1.00	0.00	1.50	150.00	0.15	2	16.01	2.59	83.20	82.98	84.12
L-F-1	**Natural**	**F-1**	**SYS-F-OUT**	**74.12**	**73.69**	**1.00**	**0.00**	**0.00**	**855.00**	**0.05**	**326**	**16.05**	**4.11**	**82.70**	**82.68**	**86.65**
L-F-OFF	Circular	F-OFFSITE	MHI-80	75.22	75.08	1.00	0.00	4.00	70.00	0.20	255	16.58	20.02	88.42	86.77	84.05
L_JCT137	Circular	JCT137	MHI-79X	71.80	71.73	2.00	0.00	5.00	49.00	0.14	326	16.02	8.29	82.83	82.70	83.79
L_MH-25	Circular	MH-25	MHI-79	74.39	73.89	1.00	0.00	4.50	274.00	0.18	25	15.82	1.54	83.06	82.98	85.59
L_MH-26	Circular	MH-26	MH-25	74.71	74.39	1.00	0.00	4.50	200.00	0.16	25	15.82	1.53	83.07	83.06	85.09
L_MH-27	Circular	MH-27	MH-28	77.42	77.02	1.00	0.00	3.50	265.00	0.15	8	15.81	1.10	83.01	83.01	84.98
L_MH-28	Circular	MH-28	MH-26	76.11	75.21	1.00	0.00	4.00	474.00	0.19	20	16.02	1.64	83.01	83.07	83.87
L_MH-29	Circular	MH-29	MH-30	79.07	78.76	1.00	0.00	2.00	262.00	0.12	5	16.01	2.92	83.09	82.98	85.00
L_MH-30	Circular	MH-30	MH-28	77.90	77.61	1.00	0.00	2.50	68.00	0.43	10	16.02	2.55	82.98	83.01	84.22
L_MHI-77	Circular	MHI-77	MHI-78	78.28	78.06	1.00	0.00	3.00	160.00	0.14	35	16.01	5.42	83.07	82.98	83.62
L_MHI-78	Circular	MHI-78	MHI-79	77.83	77.21	1.00	0.00	3.50	257.00	0.24	51	16.01	6.88	82.98	82.98	83.62
L-MHI-79	Circular	MHI-79	JCT137	71.88	71.80	2.00	0.00	5.00	49.00	0.16	324	16.03	8.23	82.98	82.83	83.79
L-MHI-79X	Natural	MHI-79X	F-1	71.73	71.73	1.00	0.00	0.00	10.00	0.00	326	16.03	1.67	82.70	82.70	87.32
L_MHI-80	Circular	MHI-80	MHI-79	75.08	74.49	1.00	0.00	4.00	229.00	0.26	255	16.52	19.82	86.77	82.98	84.05

Table 4.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (10-Year) - Outfalls 9-16

Model: 10YR_US290_SegB_EX_A&AA.xp & 10YR_US290_SegB_EX_B-G.› 7/12/2011

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 16																
L_CI-148	Circular	CI-148	CI-149	79.39	78.78	1.00	0.00	1.50	275.00	0.22	13	16.39	7.05	84.91	82.40	84.59
L_CI-149	Circular	CI-149	MHI-81	78.28	78.19	1.00	0.00	2.00	50.00	0.18	21	16.25	6.72	82.40	82.03	83.90
L_CI-150	Circular	CI-150	MH-32	78.72	78.65	1.00	0.00	1.50	29.00	0.24	3	15.75	3.53	81.55	81.55	83.99
L_CI-151	Circular	CI-151	MHI-83	78.65	78.56	1.00	0.00	1.50	51.00	0.18	15	16.00	8.49	82.86	81.82	83.21
L_CI-152	Circular	CI-152	CI-153	78.14	77.78	1.00	0.00	1.50	190.00	0.19	2	16.04	2.15	81.55	81.55	83.29
L_CI-153	Circular	CI-153	MH-33	77.78	77.71	1.00	0.00	2.00	42.00	0.17	6	16.02	4.14	81.55	81.55	82.84
L_CI-154	Circular	CI-154	CI-155	76.89	76.57	1.00	0.00	1.50	170.00	0.19	12	16.50	6.47	82.97	81.85	82.52
L_CI-155	Circular	CI-155	MH-34	76.07	75.72	1.00	0.00	2.00	202.00	0.17	20	16.16	6.43	81.85	81.55	82.12
L_CI-155A	Circular	CI-155A	CI-155B	77.35	77.19	1.00	0.00	1.50	107.00	0.15	1	16.65	0.82	81.55	81.55	82.72
L_CI-155B	Circular	CI-155B	MH-34A	77.19	77.14	1.00	0.00	1.50	25.00	0.20	1	16.65	1.21	81.55	81.55	82.72
L_CI-156	Circular	CI-156	MH-34	76.98	76.91	1.00	0.00	2.00	42.00	0.17	17	15.84	6.01	81.55	81.55	82.20
L_CI-157	Circular	CI-157	CI-156	77.72	77.48	1.00	0.00	1.50	201.00	0.12	7	16.00	3.69	81.55	81.55	82.67
L_CI-158	Circular	CI-158	MH-35	77.29	77.24	1.00	0.00	2.00	35.00	0.14	20	15.76	7.02	81.55	81.55	82.84
L_CI-159	Circular	CI-159	CI-158	78.05	77.79	1.00	0.00	1.50	200.00	0.13	11	15.75	6.13	81.55	81.55	83.31
L_CI-160	Circular	CI-160	MHI-85	78.32	78.24	1.00	0.00	1.50	78.00	0.10	8	15.76	4.46	82.20	81.77	83.22
L_CI-161	Circular	CI-161	MH-40	76.32	76.25	1.00	0.00	2.00	29.00	0.24	4	15.77	3.54	81.55	81.55	83.59
L-G-1	**Circular**	**G-1**	**SYS-G-OUT**	**68.21**	**68.11**	**1.00**	**0.00**	**6.50**	**100.00**	**0.10**	**334**	**16.02**	**11.90**	**81.52**	**81.52**	**81.62**
L-G-2	Circular	G-2	G-1	68.51	68.21	1.00	0.00	6.50	230.00	0.13	334	16.02	10.87	81.53	81.52	82.82
L-G-3	Circular	G-3	G-2	68.77	68.51	1.00	0.00	6.50	518.00	0.05	334	16.01	9.98	81.55	81.53	82.92
L-G-4	Circular	G-4	G-3	69.57	69.27	1.00	0.00	6.00	477.00	0.06	171	16.02	5.95	81.55	81.55	82.02
L_MH-31	Circular	MH-31	MH-32	76.79	76.43	1.00	0.00	3.00	224.00	0.16	43	15.94	6.09	81.55	81.55	84.57
L_MH-32	Circular	MH-32	MH-33	75.43	74.73	1.00	0.00	4.00	500.00	0.14	73	16.03	6.27	81.55	81.55	84.04
L_MH-33	Circular	MH-33	MH-36	74.73	74.48	1.00	0.00	4.00	140.00	0.18	80	16.04	7.75	81.55	81.55	82.95
L_MH-34	Circular	MH-34	MH-34A	75.22	75.01	1.00	0.00	2.50	82.00	0.26	37	15.77	7.42	81.55	81.55	82.32
L_MH-34A	Circular	MH-34A	MH-35	75.01	74.63	1.00	0.00	2.50	147.00	0.26	37	16.00	7.48	81.55	81.55	82.70
L_MH-35	Circular	MH-35	MH-36	73.03	72.92	1.00	0.00	4.00	70.00	0.16	92	16.00	7.34	81.55	81.55	82.94
L_MH-36	Circular	MH-36	G-4	71.42	70.07	1.00	0.00	5.50	424.00	0.32	171	16.02	7.19	81.55	81.55	83.94
L_MH-40	Circular	MH-40	MH-35	75.25	74.03	1.00	0.00	3.00	529.00	0.23	37	16.01	5.18	81.55	81.55	83.64
L_MHI-81A	Circular	MHI-81	MHI-82	77.69	77.34	1.00	0.00	2.50	182.00	0.19	32	15.99	6.55	82.03	81.55	83.28
L_MHI-82	Circular	MHI-82	MH-31	76.84	76.79	1.00	0.00	3.00	22.00	0.23	43	15.96	6.07	81.55	81.55	82.42
L_MHI-83	Circular	MHI-83	MHI-84	78.06	77.49	1.00	0.00	2.00	188.00	0.30	22	16.00	7.02	81.82	81.55	82.59
L_MHI-84	Circular	MHI-84	MH-32	76.99	76.93	1.00	0.00	2.50	22.00	0.27	29	16.00	6.23	81.55	81.55	82.21
L_MHI-85	Circular	MHI-85	MHI-86	77.74	77.27	1.00	0.00	2.00	162.00	0.29	21	16.01	6.59	81.77	81.55	82.05
L_MHI-86	Circular	MHI-86	MH-40	76.77	76.70	1.00	0.00	2.50	32.00	0.22	34	16.01	6.83	81.55	81.55	82.12

Table 5.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (10-Year) - Outfalls 17-19

Model: US290_SegA_Sys_BNGLHOL_Ext10-8-31-09.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 17-19																
E11504_1	**Rectangular**	**A102**	**E11504.1**	**71.38**	**70.92**	**1**	**8.00**	**5.00**	**221.00**	**0.21**	**328**	**15.76**	**8.19**	**81.68**	**81.65**	**80.50**
BNGL-2	Circular	BNGL01	MH-2	68.04	67.96	1	0.00	4.00	63.40	0.13	88	15.76	6.94	75.97	75.89	77.83
CI1-2	Circular	CI-1	CI-2	72.25	71.88	1	0.00	2.50	312.00	0.12	16	16.01	3.17	76.00	75.92	77.20
Link252	Circular	CI-161A	CI-163	77.58	76.97	1	0.00	1.50	275.00	0.22	10	15.49	5.31	83.45	81.99	82.28
L-CI-163	Circular	CI-163	CI-164	75.05	74.72	1	0.00	3.50	299.00	0.11	12	15.49	1.19	81.99	81.90	81.81
L-CI-164	Circular	CI-164	CI-165	74.72	74.44	1	0.00	3.50	201.00	0.14	27	15.76	2.76	81.90	81.89	81.10
L-CI-165	Circular	CI-165	MHI-88	73.94	73.88	1	0.00	4.00	51.00	0.12	47	15.57	3.70	81.89	81.89	80.50
L-CI-166	Circular	CI-166	CI-165	76.59	76.44	1	0.00	1.50	100.00	0.15	5	18.58	2.74	81.88	81.89	80.50
L-CI-162	Circular	CI-167	CI-168	77.70	77.25	1	0.00	1.50	250.00	0.18	8	15.51	4.37	83.06	82.17	82.25
L-CI-168	Circular	CI-168	MHI-87	76.75	76.70	1	0.00	2.00	44.00	0.11	16	15.76	4.92	82.17	82.10	81.82
L-CI-169	Circular	CI-169	CI-170	76.51	76.11	1	0.00	1.50	200.00	0.20	2	15.76	1.65	81.89	81.88	81.05
L-CI-170	Circular	CI-170	MHI-89	75.61	75.55	1	0.00	2.00	47.00	0.13	7	15.54	2.29	81.88	81.88	80.04
L-CI-171	Circular	CI-171	MHI-91	76.10	76.05	1	0.00	1.50	50.00	0.10	17	16.04	9.32	84.17	83.37	81.50
Link255	Circular	CI-172	MHI-90	75.64	75.54	1	0.00	1.50	50.00	0.20	10	15.59	5.44	81.87	81.86	80.06
Link256	Circular	CI-173	CI-174	75.30	75.15	1	0.00	1.50	100.00	0.15	-7	16.72	3.11	81.81	81.81	79.50
L-CI-174	Circular	CI-174	MHI-92	74.65	74.58	1	0.00	2.00	50.00	0.14	-16	16.56	4.06	81.81	81.82	79.40
CI175-93	Circular	CI-175	MHI-93	72.38	72.28	1	0.00	4.00	50.00	0.20	118	15.78	9.35	82.64	82.46	81.00
L-CI-175s	Circular	CI-175S	CI-175	72.80	72.38	1	0.00	3.00	324.00	0.13	-3	16.82	1.23	82.65	82.64	81.84
L-CI-175	Circular	CI-176	CI-175	72.67	72.38	1	0.00	3.50	225.00	0.13	12	18.03	1.19	82.64	82.64	80.34
L-CI-177	Circular	CI-177	JCT-177	75.19	75.16	1	0.00	2.00	25.00	0.12	13	15.76	4.05	81.78	81.77	79.56
L-CI-179	Circular	CI-178	CI-179	75.26	75.19	1	0.00	1.50	65.00	0.11	14	15.62	7.72	81.82	81.80	80.00
L-MH96	Circular	CI-179	MHI-96	74.68	74.62	1	0.00	2.00	49.00	0.12	-27	15.40	4.18	81.80	81.80	79.57
Link262	Circular	CI-180	CI-181	75.55	75.45	1	0.00	1.50	100.00	0.10	6	19.32	3.31	81.81	81.81	79.60
L-CI-181	Circular	CI-181	MHI-95	74.95	74.90	1	0.00	2.00	50.00	0.10	15	15.52	4.63	81.81	81.81	80.00
L-CI-182	Circular	CI-182	CI-183	75.72	75.62	1	0.00	1.50	100.00	0.10	8	15.67	4.49	81.85	81.84	80.72
L-MHI-97	Circular	CI-183	MHI-97	75.12	75.04	1	0.00	2.00	42.00	0.19	15	15.39	4.73	81.84	81.83	79.50
L-CI-183	Circular	CI-184	CI-183	75.79	75.62	1	0.00	1.50	150.00	0.11	11	15.36	6.04	82.06	81.84	80.38
L-MHI-96	Circular	CI-185	MHI-96	73.98	73.34	1	0.00	3.00	401.00	0.16	32	15.48	4.48	81.81	81.80	80.11
L-CI-185	Circular	CI-186	CI-185	74.12	73.98	1	0.00	3.00	104.00	0.13	21	19.31	2.89	81.81	81.81	80.11
Link264	Circular	CI-187	CI-186	75.77	75.62	1	0.00	1.50	150.00	0.10	10	19.63	5.86	81.74	81.81	80.51
L-CI-188	Circular	CI-188	MHI-98	75.07	74.99	1	0.00	1.50	65.00	0.12	7	15.68	3.67	81.35	81.35	80.35
L-CI-189	Circular	CI-189	CI-190	74.61	74.53	1	0.00	2.00	149.00	0.05	9	18.46	2.72	81.35	81.34	80.70
L-CI-190	Circular	CI-190	MHI-99	74.53	74.48	1	0.00	2.00	51.00	0.10	6	18.31	1.83	81.34	81.33	80.43
L-CI-191	Circular	CI-191	MHI-101	72.18	72.19	1	0.00	4.00	45.00	-0.02	97	16.02	7.63	81.68	81.61	79.60
Link265	Circular	CI-192	MHI-103	74.23	74.17	1	0.00	1.50	62.00	0.10	8	19.40	4.42	81.33	81.33	79.00
L-CI-193	Circular	CI-193	DI-21	74.47	74.41	1	0.00	1.50	55.00	0.11	6	19.35	3.07	81.11	81.10	79.40
L-CI-194	Circular	CI-194	MHI-105	72.76	72.69	1	0.00	3.00	45.00	0.16	-13	16.61	1.62	81.10	81.10	79.60
L-CI-195	Circular	CI-195	MHI-106	73.28	73.25	1	0.00	2.50	58.00	0.05	19	15.57	3.82	81.09	81.09	79.61
L-CI-196	Circular	CI-196	CI-195	73.98	73.78	1	0.00	2.00	256.00	0.08	13	19.41	4.09	81.11	81.09	78.71
L-CI-197	Circular	CI-197	MHI-110	75.76	75.71	1	0.00	1.50	48.00	0.10	6	15.76	3.11	81.08	81.08	79.86
CI2-MH2	Circular	CI-2	MH-2	71.38	71.07	1	0.00	3.00	208.00	0.15	19	16.01	4.57	75.92	75.89	76.40
CI2A-MH2	Circular	CI-2A	MH-2	74.81	74.68	1	0.00	1.50	65.90	0.20	7	15.76	4.56	76.11	75.89	77.50
CI3-4	Circular	CI-3	CI-4	72.74	71.80	1	0.00	2.00	376.00	0.25	30	15.62	9.36	80.49	75.82	79.77
CI4-MH4	Circular	CI-4	MH-4	70.80	70.52	1	0.00	3.00	172.00	0.16	37	15.61	5.95	75.82	75.75	77.80
CI4A-MH4	Circular	CI-4A	MH-4	74.91	74.83	1	0.00	1.50	15.80	0.51	6	16.01	4.70	75.99	75.80	76.50
CI5-MH5	Circular	CI-5	MH-5	72.81	72.72	1	0.00	2.00	92.00	0.10	13	15.76	4.15	75.87	75.72	76.40
CI5A-MH5	Circular	CI-5A	MH-5	75.01	74.91	1	0.00	1.50	46.60	0.21	-1	16.44	1.31	75.72	75.72	77.37
CI6-MH6	Circular	CI-6	MH-6	72.81	72.69	1	0.00	2.00	120.00	0.10	5	15.77	1.66	75.70	75.70	76.20
CI6A-MH6	Circular	CI-6A	MH-6	74.71	74.65	1	0.00	1.50	28.20	0.21	4	15.76	3.74	75.70	75.70	77.50
NWC-175	Circular	CNT-01	CI-175	73.34	72.38	1	0.00	4.00	489.00	0.20	117	16.04	9.20	84.67	82.64	81.83

Table 5.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (10-Year) - Outfalls 17-19

Model: US290_SegA_Sys_BNGLHOL_Ext10-8-31-09.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Link274	Circular	CNT-02	CI-191	72.19	72.18	1	0.00	4.00	4.00	0.25	103	16.01	8.10	81.73	81.68	80.50
L-DI-18	Circular	DI-18	MH-42	74.33	73.97	1	0.00	2.00	140.00	0.26	13	19.88	4.24	81.10	81.09	79.40
L-DI-19	Circular	DI-19	CI-195	74.55	74.38	1	0.00	1.50	86.00	0.20	10	15.76	5.76	81.10	81.09	80.21
L-DI-20	Circular	DI-20	CI-196	74.05	73.98	1	0.00	2.00	85.00	0.08	7	15.73	2.44	81.12	81.11	79.31
L-DI-21	Circular	DI-21	CI-194	72.91	72.76	1	0.00	3.00	102.00	0.15	11	19.33	1.54	81.10	81.10	79.39
L-DI-22	Circular	DI-22	MHI-110	73.94	73.84	1	0.00	1.50	120.00	0.08	-5	16.68	2.30	81.09	81.08	79.50
L-DI-23	Circular	DI-23	MHI-107	73.14	72.90	1	0.00	2.00	120.00	0.20	13	15.75	4.20	81.15	81.13	80.10
L-DI-24	Circular	DI-24	MHI-104	74.67	74.25	1	0.00	1.50	167.00	0.25	16	16.07	8.90	84.03	81.32	79.81
L-DI-28	Circular	DI-28	MHI-100	74.28	74.09	1	0.00	2.00	80.00	0.24	12	15.76	3.80	81.33	81.33	83.14
L-DI-31	Circular	DI-31	MHI-102	71.46	71.32	1	0.00	4.50	85.00	0.16	103	15.80	6.42	81.55	81.47	82.64
Link267	Circular	DI-34	MHI-110	71.64	71.37	1	0.00	4.00	187.00	0.14	36	15.99	3.07	81.08	81.08	82.10
L-J-177	Rectangular	JCT-177	A102	71.81	71.38	1	8.00	5.00	395.00	0.11	310	15.76	7.73	81.77	81.68	80.50
MH10-11	Circular	MH-10	MH-11	65.79	65.37	1	0.00	5.50	420.00	0.10	198	15.77	8.01	75.45	75.29	77.81
MH10-11	Circular	MH-10	MH-11	70.33	68.68	1	0.00	3.00	420.00	0.39	30	16.21	6.10	75.45	75.29	77.81
E11504_3	**Circular**	**MH-11**	**E11504.3**	**65.37**	**65.16**	**1**	**0.00**	**5.50**	**210.00**	**0.10**	**257**	**16.01**	**10.89**	**75.29**	**75.16**	**75.27**
E11504_3	**Circular**	**MH-11**	**E11504.3**	**68.68**	**68.47**	**1**	**0.00**	**3.00**	**210.00**	**0.10**	**40**	**16.13**	**5.83**	**75.29**	**75.16**	**75.27**
MH2-4	Circular	MH-2	MH-4	67.96	67.65	1	0.00	4.50	228.00	0.14	111	15.76	6.95	75.89	75.75	76.80
MH4-7	Circular	MH-4	MH-7	67.15	66.97	1	0.00	5.00	148.00	0.12	153	15.76	7.76	75.75	75.68	78.00
L-MH-42	Circular	MH-42	MH-43	71.93	71.75	1	0.00	4.00	150.00	0.12	20	19.26	1.98	81.09	81.08	82.52
L-MH-43	Circular	MH-43	DI-34	71.75	71.64	1	0.00	4.00	81.00	0.14	34	19.26	2.70	81.08	81.08	80.80
MH5-6	Circular	MH-5	MH-6	72.72	72.51	1	0.00	2.00	212.00	0.10	13	15.77	4.07	75.72	75.70	77.00
MH6-7	Circular	MH-6	MH-7	72.51	72.21	1	0.00	2.00	100.00	0.30	21	15.77	6.60	75.70	75.68	77.16
MH7-8	Circular	MH-7	MH-8	66.45	66.31	1	0.00	5.50	140.00	0.10	174	15.77	7.31	75.68	75.63	76.73
MH8-9	Circular	MH-8	MH-9	66.31	66.13	1	0.00	5.50	180.00	0.10	153	15.77	6.44	75.63	75.58	77.12
MH8-9	Circular	MH-8	MH-9	71.42	70.94	1	0.00	2.00	49.07	0.98	21	15.76	6.79	75.63	75.58	77.12
MH9-10	Circular	MH-9	MH-10	66.13	65.79	1	0.00	5.50	340.00	0.10	197	15.76	8.24	75.58	75.45	76.20
MH9-10	Circular	MH-9	MH-10	70.94	70.33	1	0.00	3.00	340.00	0.18	33	15.81	5.48	75.58	75.45	76.20
MH1-CI1	Circular	MHI-1	CI-1	72.81	72.75	1	0.00	2.00	40.00	0.15	13	16.01	4.08	76.02	76.00	77.50
L-MHI-100	Circular	MHI-100	MHI-104	73.09	72.75	1	0.00	3.00	258.00	0.13	27	15.76	3.79	81.33	81.32	80.62
L-MHI-101	Circular	MHI-101	DI-31	71.59	71.46	1	0.00	4.50	79.00	0.16	94	15.81	5.86	81.61	81.55	79.70
L-MHI-102	Circular	MHI-102	MHI-104	71.32	70.88	1	0.00	4.50	237.00	0.19	106	15.66	6.62	81.47	81.32	79.71
Link278	Circular	MHI-103	MHI-102	74.17	73.79	1	0.00	2.00	200.00	0.19	11	18.88	3.42	81.33	81.47	79.40
L-MHI-104	Rectangular	MHI-104	MHI-108	70.88	70.38	1	5.00	4.00	225.00	0.22	158	15.76	7.86	81.32	81.20	80.40
L-MHI-105	Circular	MHI-105	MH-42	72.69	72.43	1	0.00	3.00	152.00	0.17	-17	16.64	2.67	81.10	81.09	79.71
L-MHI-106	Circular	MHI-106	MH-43	73.25	73.13	1	0.00	2.50	153.00	0.08	20	15.57	4.15	81.09	81.08	79.61
L-MHI-107	Circular	MHI-107	MHI-108	70.86	70.38	1	0.00	4.00	207.00	0.23	68	15.81	5.37	81.13	81.20	80.00
L-MHI-108	Rectangular	MHI-108	MHI-109	70.38	69.92	1	7.00	5.00	372.00	0.12	226	15.76	6.43	81.20	81.18	80.00
E11504_2	**Rectangular**	**MHI-109**	**E11504.2**	**69.92**	**69.52**	**1**	**7.00**	**5.00**	**261.00**	**0.15**	**231**	**15.76**	**6.58**	**81.18**	**81.17**	**80.80**
L-MHI-110	Circular	MHI-110	MHI-107	71.37	70.86	1	0.00	4.00	340.00	0.15	42	18.88	3.50	81.08	81.13	79.29
MH3-CI3	Circular	MHI-3	CI-3	72.81	72.74	1	0.00	2.00	44.00	0.16	21	15.76	6.44	80.74	80.49	78.53
L-MHI-87	Circular	MHI-87	MHI-89	76.70	75.55	1	0.00	2.00	500.00	0.23	12	15.44	3.72	82.10	81.88	80.38
L-MHI-88	Circular	MHI-88	MHI-89	73.88	73.55	1	0.00	4.00	191.00	0.17	59	15.57	4.64	81.89	81.88	80.42
L-MHI-89	Rectangular	MHI-89	MHI-90	73.55	73.04	1	4.00	4.00	299.00	0.17	79	15.58	4.94	81.88	81.86	80.42
L-MHI-90	Rectangular	MHI-90	MHI-92	73.04	72.58	1	4.00	4.00	200.00	0.23	107	15.59	6.64	81.86	81.82	79.75
L-MHI-91	Circular	MHI-91	MHI-90	76.05	75.54	1	0.00	1.50	182.00	0.28	14	15.36	7.72	83.37	81.86	81.42
L-MHI-92	Rectangular	MHI-92	MHI-94	72.58	71.86	1	5.00	4.00	325.00	0.22	115	15.61	5.72	81.82	81.79	79.35
L-MHI-93	Circular	MHI-93	MHI-94	72.28	71.86	1	0.00	4.00	182.00	0.23	118	15.78	9.35	82.46	81.79	80.40
L-JCT-177	Rectangular	MHI-94	JCT-177	71.86	71.81	1	8.00	5.00	49.00	0.10	297	15.77	7.41	81.79	81.77	80.09
L-MHI-95	Circular	MHI-95	MHI-96	74.40	74.13	1	0.00	2.50	182.00	0.15	28	15.57	5.67	81.81	81.80	79.66
L-MHI-94	Circular	MHI-96	MHI-94	72.63	71.86	1	0.00	4.00	426.00	0.18	66	15.80	5.19	81.80	81.79	80.44
L-CI-186	Circular	MHI-97	CI-186	75.04	74.62	1	0.00	2.50	233.00	0.18	20	15.39	4.10	81.83	81.81	79.74
L-MHI-98	Circular	MHI-98	MHI-100	74.49	74.09	1	0.00	2.00	200.00	0.20	16	15.68	4.92	81.35	81.33	81.65
L-MHI-99	Circular	MHI-99	DI-28	74.48	74.28	1	0.00	2.00	84.00	0.24	8	15.76	2.49	81.33	81.33	80.68
Link277	Circular	POND-4B	CI-3	72.80	72.74	1	0.00	2.00	61.00	0.10	9	16.40	2.71	80.51	80.49	80.00

Table 6.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (10-Year) - Outfalls 20-22

Model: US290_SegA_Sys_BKHSEW43_Ext10-adjust-wat.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 20-22																
E115-01.1	**Natural**	**BRCKH01.0**	**BRCKH00.1**	**51.24**	**50.96**	**1.00**	**16.00**	**0.00**	**114.20**	**0.25**	**6348**	**17.86**	**9.52**	**67.81**	**67.73**	**70.01**
E115-02	Natural	BRCKH01.1	BRCKH01.0	51.27	51.24	1.00	16.00	0.00	307.00	0.01	5918	17.85	7.71	**68.71**	67.81	70.50
E115-03.1	Natural	BRCKH01.2	BRCKH01.1	51.39	51.27	1.00	16.00	0.00	151.00	0.08	5918	17.83	7.37	69.22	68.71	71.80
E115-01.3	Natural	BRCKH01.3	BRCKH01.2	51.58	51.39	1.00	16.00	0.00	254.70	0.07	4779	17.76	6.24	69.63	69.22	71.80
CI1-MH1	Circular	CI-1	MHI-1	65.02	64.96	1.00	0.00	1.50	40.00	0.15	7	16.00	4.09	69.67	69.66	68.46
CI1-MHI1	Circular	CI-1.1	MHI-1.1	58.76	58.66	1.00	0.00	2.00	32.00	0.31	9	15.90	2.99	68.19	68.19	66.18
CI1-2	Circular	CI-1.2	CI-2.2	70.95	70.31	1.00	0.00	2.00	400.00	0.16	7	15.77	2.36	75.70	75.46	76.30
CI10-MH2	Circular	CI-10	MH-23	60.65	60.38	1.00	0.00	3.50	190.00	0.14	78	21.20	8.07	69.60	69.62	68.26
CI10-J11	Circular	CI-10.1	JCT-11	66.81	66.11	1.00	0.00	2.00	32.00	2.20	5	15.78	5.68	69.64	69.64	70.51
CI11-1	Circular	CI-11	CI-10	61.05	60.65	1.00	0.00	3.50	400.00	0.10	73	21.20	7.48	69.59	69.60	67.13
CI11-J12	Circular	CI-11.1	JCT-12	66.31	65.74	1.00	0.00	2.00	32.00	1.78	4	15.78	5.24	69.64	69.64	69.92
CI12-MH2	Circular	CI-12	MH-25	62.49	62.41	1.00	0.00	2.50	70.00	0.11	31	21.36	6.22	69.59	69.59	67.60
CI12-MH17	Circular	CI-12.1	MHI-17	65.61	65.57	1.00	0.00	2.00	44.00	0.09	4	15.78	2.68	69.64	69.63	69.60
CI12A-12	Circular	CI-12A	CI-12	62.59	62.49	1.00	0.00	2.00	60.00	0.17	17	21.36	5.51	69.59	69.59	67.97
CI13I-1	Circular	CI-13	CI-12	63.39	62.99	1.00	0.00	2.00	270.00	0.15	20	15.63	6.34	69.59	69.59	68.10
CI-13-to-CI-13o	Circular	CI-13.1	CI-131	65.61	65.53	1.00	0.00	1.50	26.00	0.30	6	16.00	4.40	69.60	69.60	69.17
E11504_4	**Trapezoidal**	**CI-131**	**E11504.4**	**60.31**	**60.27**	**1.00**	**16.00**	**10.00**	**40.00**	**0.10**	**350**	**15.82**	**1.80**	**69.60**	**69.60**	**70.31**
CI13A-13	Circular	CI-13A	CI-13	63.45	63.39	1.00	0.00	2.00	60.00	0.10	17	15.70	5.23	69.59	69.59	68.64
CI14-M13	Circular	CI-14	MH-13	66.14	66.02	1.00	0.00	2.50	116.00	0.10	23	15.75	4.63	69.85	69.76	71.25
CI14A-13	Circular	CI-14A	MH-13	70.31	70.22	1.00	0.00	1.50	45.00	0.20	0	0.00	0.00	69.76	69.76	71.81
CI15-J15	Circular	CI-15	JCT-15.1	66.81	66.71	1.00	0.00	2.00	20.00	0.50	9	15.75	4.70	69.73	69.73	70.50
CI15A-14	Circular	CI-15A	MH-14	68.31	68.20	1.00	0.00	1.50	53.40	0.20	0	15.79	0.50	69.76	69.76	71.27
CI-16-to-MHI-1	Circular	CI-16	MHI-16	66.04	66.00	1.00	0.00	2.00	44.00	0.09	4	16.00	2.71	69.67	69.67	70.17
E11504_6	Circular	CI-2	J-CI-2	63.18	62.23	1.00	0.00	3.00	32.00	2.97	59	16.01	11.63	69.88	69.89	67.61
CI2-MHI2	Circular	CI-2.1	MHI-2.1	59.04	59.00	1.00	0.00	2.00	44.00	0.09	15	21.25	4.61	68.19	68.19	67.98
CI2-MH1	Circular	CI-2.2	MHI-1.2	69.81	69.72	1.00	0.00	2.00	44.00	0.20	23	15.75	7.15	75.46	75.17	74.83
CI2B-MH7	Circular	CI-2B	MH-7	64.96	64.56	1.00	0.00	1.50	123.30	0.32	11	21.26	6.19	70.09	73.00	67.83
CI2C-CI2	Circular	CI-2C	CI-2B	65.21	64.96	1.00	0.00	1.50	227.60	0.11	11	21.19	6.02	69.86	70.09	67.76
CI3-MH3	Circular	CI-3	MHI-3	63.81	63.77	1.00	0.00	1.50	40.00	0.10	4	16.01	2.37	67.82	67.82	67.92
CI3-J1	Circular	CI-3.1	JCT-10	60.89	60.79	1.00	0.00	2.00	32.00	0.31	62	21.21	19.13	71.74	73.06	69.86
CI3-4	Circular	CI-3.2	CI-4.2	70.83	69.63	1.00	0.00	2.00	400.00	0.30	5	15.76	2.30	75.57	74.45	75.57
CI3A-3	Circular	CI-3A	CI-3	63.92	63.81	1.00	0.00	1.50	118.20	0.09	3	16.01	1.41	67.82	67.82	67.36
CI4-MH4	Circular	CI-4	MHI-4	63.52	63.48	1.00	0.00	1.50	40.00	0.10	6	15.75	3.31	67.82	67.82	69.58
CI4-MH1	Circular	CI-4.1	MHI-13	61.81	61.65	1.00	0.00	2.00	55.00	0.29	34	20.73	10.73	70.47	71.70	70.37
CI4-MH2	Circular	CI-4.2	MHI-2.2	69.63	69.50	1.00	0.00	2.00	44.00	0.30	23	15.76	7.28	74.45	74.07	74.34
CI5-J1	Circular	CI-5	JCT-14	62.07	62.01	1.00	0.00	2.00	32.00	0.19	-29	20.38	4.56	70.21	69.95	70.04
CI5-MH4	Circular	CI-5.1	MHI-4.2	69.31	69.24	1.00	0.00	2.00	44.00	0.16	13	15.51	5.33	73.20	73.10	73.64
CI6-J1	Circular	CI-6	JCT-15	62.40	62.34	1.00	0.00	2.00	32.00	0.19	30	21.23	9.41	70.14	70.14	68.45
CI6-MH5	Circular	CI-6.1	MHI-5.1	67.31	67.17	1.00	0.00	2.50	200.00	0.07	26	16.20	5.29	73.09	72.74	71.38
CI7-16	Circular	CI-7	MH-16	62.70	62.64	1.00	0.00	2.00	32.00	0.19	58	21.21	18.36	70.36	70.35	67.17
CI7-MH3	Circular	CI-7.1	MHI-3.1	70.05	70.01	1.00	0.00	2.00	44.00	0.10	5	16.00	3.28	72.94	72.92	73.86
CI8-MH19	Circular	CI-8	MH-19	62.98	62.95	1.00	0.00	2.00	32.00	0.09	51	21.21	16.01	70.52	70.52	67.31
CI8-J7	Circular	CI-8.1	JCT-7	69.81	69.12	1.00	0.00	2.00	32.00	2.15	7	15.77	7.84	71.85	71.83	71.81
CI9-MHI2	Circular	CI-9	MHI-22	59.57	59.51	1.00	0.00	4.00	50.00	0.12	74	21.21	5.64	69.62	70.45	69.07
CI9-MH10	Circular	CI-9.1	MH-10	68.61	68.58	1.00	0.00	2.00	32.00	0.09	9	15.78	4.67	70.20	70.17	70.95
L-COH1	Circular	COH01	COH1	62.16	61.84	1.00	0.00	4.00	160.00	0.20	116	16.25	9.17	70.20	70.13	68.04
E11504_5	Circular	COH1	J-COH1	61.84	61.16	1.00	0.00	4.00	338.00	0.20	116	16.26	8.97	70.13	70.01	68.19
11504.3	Natural	E11504.3	E11504.4	58.48	58.33	1.00	0.00	0.00	200.00	0.07	1096	17.76	6.06	69.67	69.60	75.23
11504.4	Natural	E11504.4	E11504.5	58.33	58.02	1.00	0.00	0.00	600.00	0.05	1188	16.51	7.90	69.60	69.33	75.16
11504.5	Natural	E11504.5	E11504.6	58.02	58.01	1.00	0.00	0.00	42.50	0.02	1174	16.52	7.77	69.33	69.32	75.16
11504.60	Natural	E11504.6	E11504.7	58.01	57.34	1.00	0.00	0.00	428.00	0.16	1161	16.52	7.81	69.32	69.26	72.62
11504.7	Natural	E11504.7	E11504.8	57.34	57.23	1.00	0.00	0.00	63.75	0.17	1161	16.57	8.10	69.26	69.25	72.61

Table 6.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Existing Conditions (10-Year) - Outfalls 20-22

Model: US290_SegA_Sys_BKHSEW43_Ext10-adjust-wat.xp **9/8/2009**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
11504.8	Natural	E11504.8	BRCKH01.2	57.23	55.83	1.00	0.00	0.00	778.00	0.18	1162	16.57	8.28	69.25	69.22	73.29
Link204	Circular	J-CI-2	J-COH1	62.23	61.34	1.00	0.00	2.50	78.00	1.14	59	16.01	11.72	69.89	70.01	69.07
Link205	**Circular**	**J-COH1**	**E5150100**	**56.59**	**56.43**	**1.00**	**0.00**	**4.50**	**82.00**	**0.20**	**171**	**16.02**	**11.18**	**70.02**	**70.00**	**70.39**
J10-J9	Circular	JCT-10	JCT-9	55.79	55.48	1.00	0.00	7.00	280.00	0.11	292	15.76	7.38	73.06	69.56	73.00
J11-J12	Circular	JCT-11	JCT-12	63.11	62.74	1.00	0.00	5.00	248.00	0.15	156	15.78	7.87	69.64	69.64	70.31
J12-MH17	Circular	JCT-12	MHI-17	62.74	62.39	1.00	0.00	5.00	248.00	0.14	160	15.78	7.85	69.64	69.63	70.53
J14-MH13	Circular	JCT-14	MHI-13	59.01	58.65	1.00	0.00	5.00	300.00	0.12	166	15.59	8.38	69.95	71.70	69.33
J15-J14	Circular	JCT-15	JCT-14	59.34	59.01	1.00	0.00	5.00	300.00	0.11	155	15.56	7.82	70.14	69.95	68.38
J15-16	Circular	JCT-15.1	MHI-16	62.64	62.34	1.00	0.00	5.50	300.00	0.10	153	15.81	6.34	69.73	69.67	70.92
J3-MH1	Circular	JCT-3	MHI-1.1	52.46	51.76	1.00	0.00	9.00	500.00	0.14	526	20.84	8.23	69.63	68.19	69.81
J7-MH9	Circular	JCT-7	MH-9	64.12	63.66	1.00	0.00	5.00	380.00	0.12	140	16.02	7.12	71.83	70.75	72.31
J9-MH6	Circular	JCT-9	MH-6	55.48	55.20	1.00	0.00	7.00	250.00	0.11	330	20.35	8.53	69.56	69.54	67.85
MH10-J11	Circular	MH-10	JCT-11	63.40	63.11	1.00	0.00	5.00	208.00	0.14	152	15.90	7.73	70.17	69.64	71.18
MH11-J10	Circular	MH-11	JCT-10	56.08	55.79	1.00	0.00	7.00	260.00	0.11	278	15.76	7.09	74.17	73.06	75.58
MH13-14	Circular	MH-13	MH-14	66.02	65.84	1.00	0.00	2.50	184.00	0.10	26	15.76	5.26	69.76	69.76	71.76
MH14-J15	Circular	MH-14	JCT-15.1	62.84	62.64	1.00	0.00	5.50	200.00	0.10	145	15.80	5.96	69.76	69.73	71.50
MH14s-MH14	Circular	MH-14s	MH-14	63.39	63.34	1.00	0.00	5.00	49.50	0.10	122	16.01	7.15	69.78	69.76	72.50
MH16-J15	Circular	MH-16	JCT-15	59.64	59.34	1.00	0.00	5.00	300.00	0.10	144	15.56	7.32	70.35	70.14	67.74
MH-18-1	Circular	MH-18	MH-16	59.79	59.64	1.00	0.00	5.00	190.00	0.08	135	15.56	6.88	70.51	70.35	68.18
Link207	Circular	MH-18S	MH-18S2	62.42	61.92	1.00	0.00	4.00	189.11	0.27	131	15.84	10.32	71.65	70.68	68.35
MH18s-18	Circular	MH-18S2	MH-18	60.84	60.79	1.00	0.00	4.00	49.40	0.10	122	15.53	9.68	70.68	70.51	67.90
MH-19-1	Circular	MH-19	MH-18	61.95	61.79	1.00	0.00	3.00	160.00	0.10	66	21.21	9.29	70.52	70.51	67.69
MH-20-1	Circular	MH-20	MH-19	62.81	62.45	1.00	0.00	2.50	320.00	0.11	22	15.95	4.36	70.52	70.52	70.63
MH-21-2	Circular	MH-21	MH-20	63.63	63.31	1.00	0.00	2.00	210.00	0.15	11	15.95	3.47	70.52	70.52	70.36
MH23-CI9	Circular	MH-23	CI-9	59.88	59.57	1.00	0.00	4.00	310.00	0.10	78	21.21	6.15	69.62	69.62	68.51
MH24-CI1	Circular	MH-24	CI-11	61.22	61.05	1.00	0.00	3.50	170.00	0.10	56	21.30	5.82	69.59	69.59	68.16
MH24s-24	Circular	MH-24S	MH-24	64.10	62.72	1.00	0.00	2.00	52.70	2.62	27	21.31	8.39	69.59	69.59	67.37
MH25-2	Circular	MH-25	MH-24	62.41	62.22	1.00	0.00	2.50	160.00	0.12	35	21.36	7.07	69.59	69.59	68.08
MH6-J3	Circular	MH-6	JCT-3	53.20	52.46	1.00	0.00	9.00	570.00	0.13	526	20.84	8.23	69.54	69.63	67.71
MH7-6	Circular	MH-7	MH-6	55.59	55.20	1.00	0.00	7.00	230.00	0.17	487	20.95	12.57	73.00	69.54	73.00
Link208	Circular	MH-7S	MH-7S2	56.11	55.73	1.00	0.00	7.00	364.99	0.10	545	20.77	14.04	72.29	70.74	71.63
MH7S-7	Circular	MH-7S2	MH-7	55.73	55.59	1.00	0.00	7.00	98.00	0.14	490	20.91	12.64	70.74	73.00	68.24
MH8-7	Circular	MH-8	MH-7	60.91	60.59	1.00	0.00	2.00	160.00	0.20	-18	20.28	4.34	73.80	73.00	74.04
MH8-9	Circular	MH-8.1	MH-9	67.81	67.76	1.00	0.00	2.00	55.00	0.09	5	15.77	3.06	70.76	70.75	72.41
MH9-10	Circular	MH-9	MH-10	63.66	63.40	1.00	0.00	5.00	200.00	0.13	144	15.90	7.29	70.75	70.17	71.57
MH1-2	Circular	MHI-1	MHI-2	64.46	63.82	1.00	0.00	2.00	200.00	0.32	26	16.24	8.36	69.66	69.85	67.58
MH1-01.0	Circular	MHI-1.1	BRCKH01.0	51.76	51.31	1.00	0.00	9.00	320.00	0.14	542	20.87	8.49	68.19	67.81	65.16
MH1-2.1	Circular	MHI-1.2	MHI-2.2	69.22	69.00	1.00	0.00	2.50	184.00	0.12	39	15.75	7.89	75.17	74.07	76.25
MH12-11	Circular	MHI-12	MH-11	56.29	56.08	1.00	0.00	7.00	190.00	0.11	268	15.76	6.89	71.83	74.17	74.31
MH12s-12	Circular	MHI-12S	MHI-12	60.41	60.29	1.00	0.00	3.00	62.10	0.19	42	20.37	5.78	70.78	71.83	70.70
MHI13-12	Circular	MHI-13	MHI-12	58.15	57.79	1.00	0.00	5.50	360.00	0.10	174	15.58	7.33	71.70	71.83	70.10
MH16-17	Circular	MHI-16	MHI-17	62.34	62.11	1.00	0.00	5.50	188.00	0.12	169	15.83	7.11	69.67	69.63	70.97
MH17-18	Circular	MHI-17	MHI-18	60.84	60.49	1.00	0.00	6.50	196.00	0.18	346	15.82	10.36	69.63	69.61	70.40
MH18o	Circular	MHI-18	CI-131	60.49	60.31	1.00	0.00	6.50	100.00	0.18	345	15.82	10.73	69.61	69.60	70.85
MH2-CI2	Circular	MHI-2	CI-2	63.32	63.18	1.00	0.00	2.50	40.00	0.35	46	16.01	9.46	69.85	69.88	67.74
MHI2-I1	Circular	MHI-2.1	MHI-1.1	58.50	58.26	1.00	0.00	2.50	200.00	0.12	32	21.25	6.43	68.19	68.19	66.12
MH2-3	Circular	MHI-2.2	MHI-3.1	67.50	66.85	1.00	0.00	4.00	500.00	0.13	69	16.00	5.62	74.07	72.92	77.24
MH22-12	Circular	MHI-22	MHI-12	59.01	58.79	1.00	0.00	4.50	200.00	0.11	84	15.76	5.27	70.45	71.83	70.99
MH3-01.0	Circular	MHI-3	BRCKH01.0	62.72	62.31	1.00	0.00	2.00	180.00	0.23	28	16.00	9.00	67.82	67.81	68.00
MH3-6	Circular	MHI-3.1	MHI-6	66.65	66.36	1.00	0.00	4.00	196.00	0.15	78	15.77	6.76	72.92	72.36	74.10
Link191	Circular	MHI-4	MHI-3	62.98	62.72	1.00	0.00	2.00	200.00	0.13	16	15.62	4.97	67.82	67.82	67.05
MHI4-J3	Circular	MHI-4.1	JCT-3	59.00	58.96	1.00	0.00	2.50	20.00	0.20	33	15.90	6.59	71.66	69.63	71.98
MH4-5	Circular	MHI-4.2	MHI-5.1	67.69	67.31	1.00	0.00	2.50	272.00	0.14	19	15.77	4.56	73.10	72.74	74.44
MHI5-4	Circular	MHI-5	MHI-4.1	59.90	59.50	1.00	0.00	2.00	200.00	0.20	-15	21.20	4.66	70.71	71.66	73.20
MH5-6	Circular	MHI-5.1	MHI-6	66.17	65.93	1.00	0.00	3.50	200.00	0.12	49	16.20	5.08	72.74	72.36	74.00
MH6-J7	Circular	MHI-6	JCT-7	64.36	64.12	1.00	0.00	5.00	204.00	0.12	133	16.03	6.77	72.36	71.83	72.21
W43-14	Circular	W43RD	MH-14s	63.74	63.39	1.00	0.00	5.00	174.00	0.20	122	16.01	6.88	69.88	69.78	72.57

Table 7.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (100-Year) - Outfalls 1-4

Model: 100YR_SegE_Mitigation Alt. 1.xp

10/29/2009

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 1-4																	
L-A-2	Rectangular	2123+99.96	A-1	EX-2	132.81	132.77	1.00	4.00	2.00	83.05	0.00	15	15.94	1.91	137.20	137.19	136.81
L-A-2	Trapezoidal	2123+99.96	A-1	EX-2	136.31	136.80	1.00	15.00	0.50	83.05	0.00	4	16.24	0.93	137.20	137.19	136.81
L-A-32	Circular	2132+49.96	A-10	MH-1	131.39	131.16	1.00	0.00	3.00	229.95	0.00	27	15.94	3.75	137.27	137.01	136.42
L-A-32	Trapezoidal	2132+49.96	A-10	MH-1	135.50	137.00	1.00	0.00	0.50	229.95	0.00	0	16.48	0.84	137.27	137.18	136.42
L-A-35	Circular	2136+20.00	A-11	MH-2	132.62	132.44	1.00	0.00	1.50	64.27	0.00	9	15.94	4.79	136.88	136.78	137.07
L-A-36	Circular	2139+20.00	A-12	EX-8	132.24	132.09	1.00	0.00	1.50	53.88	0.00	9	15.94	5.32	136.80	136.50	136.80
L-A-40	Rectangular	2143+99.94	A-13	MH-4	130.05	129.86	1.00	6.00	3.00	151.27	0.00	83	15.91	5.18	136.02	135.83	135.42
L-A-39	Circular	2142+20.00	A-14	MH-3	131.86	131.70	1.00	0.00	1.50	56.75	0.00	8	15.94	4.76	136.22	136.08	136.46
L-A-42	Circular	2145+20.00	A-15	MH-4	131.52	131.36	1.00	0.00	1.50	56.88	0.00	9	15.93	4.90	135.97	135.83	136.16
L-A-43	Circular	2148+20.00	A-16	MH-5	131.13	130.97	1.00	0.00	1.50	56.88	0.00	12	15.93	6.64	135.75	135.40	135.82
L-A-45	Rectangular	2152+99.93	A-17	A-18	127.67	127.02	1.00	6.00	4.00	650.00	0.00	103	16.43	4.82	134.68	133.97	134.37
L-A-46	Rectangular	2159+49.93	A-18	A-19	127.02	126.42	1.00	6.00	4.00	600.00	0.00	110	16.37	4.70	133.97	133.22	134.20
L-A-47	Rectangular	2165+49.93	A-19	A-20	126.42	125.72	1.00	6.00	4.00	700.00	0.00	116	16.28	4.81	133.22	132.25	133.30
L-A-4	Rectangular	2126+99.96	A-2	EX-3	132.66	132.60	1.00	4.00	2.00	86.07	0.00	27	15.94	3.39	137.15	137.14	136.51
L-A-4	Trapezoidal	2126+99.96	A-2	EX-3	136.01	136.27	1.00	22.50	0.50	86.07	0.00	12	16.15	1.53	137.15	137.14	136.51
L-A-48	Rectangular	2172+49.93	A-20	A-27	125.72	124.49	1.00	6.00	4.00	950.00	0.00	125	16.25	5.18	132.25	130.93	132.95
L-A-50	Circular	2160+00.00	A-21	A-22	129.50	128.89	1.00	0.00	2.50	518.74	0.00	15	16.25	3.03	132.87	132.23	134.50
L-A-51	Circular	2165+18.74	A-22	EX-9	128.89	128.51	1.00	0.00	2.50	130.07	0.00	39	16.25	7.90	132.23	131.21	132.50
L-A-14	Rectangular	2170+00.00	A-23	EX-10	128.18	127.94	1.00	6.00	3.00	228.31	0.00	50	16.32	3.75	131.13	131.01	133.00
L-A-16	Rectangular	2177+18.74	A-24	EX-11	127.47	127.33	1.00	6.00	3.00	136.16	0.00	56	16.31	3.94	130.83	130.82	134.30
L-A-18	Rectangular	2180+42.96	A-25	EX-12	127.16	127.06	1.00	6.00	3.00	116.71	0.00	61	16.31	4.72	130.80	130.79	134.31
L-A-20	Rectangular	2183+22.96	A-26	EX-13	125.29	123.00	1.00	6.00	3.00	215.39	0.00	65	16.31	3.61	130.78	130.75	133.64
L-A-49	Rectangular	2181+99.93	A-27	A-28	124.49	123.79	1.00	6.00	4.00	400.68	0.00	137	16.25	5.71	130.93	130.40	132.07
L-A-95	Rectangular	2186+00.59	A-28	MH-13	122.79	122.77	2.00	4.00	4.00	12.00	0.17	238	16.99	7.42	130.40	129.85	131.47
L-A-58	Circular	2186+99.93	A-29	A-28	123.14	123.04	1.00	0.00	4.00	99.42	0.00	39	15.77	3.91	130.42	130.40	131.17
L-A-7	Rectangular	2130+99.96	A-3	EX-5	132.45	132.38	1.00	5.00	2.00	85.76	0.00	51	17.08	5.04	137.06	137.04	136.45
L-A-7	Trapezoidal	2130+99.96	A-3	EX-5	135.95	136.42	1.00	38.00	0.50	150.00	0.00	14	16.80	0.93	137.06	137.04	136.45
L-A-93	Rectangular	2185+67.90	A-30	EX-14	122.85	122.84	2.00	5.00	4.00	10.99	0.00	141	18.32	7.00	130.79	130.75	130.00
L-A-56	Circular	2192+99.90	A-31	MH-8	123.74	123.44	1.00	0.00	4.00	299.52	0.00	36	15.77	3.52	130.56	130.49	130.87
L-A-23	Circular	2192+45.28	A-32	EX-18	124.10	123.85	1.00	0.00	3.50	178.37	0.00	27	16.26	2.77	130.88	130.86	131.75
L-A-27	Circular	2194+46.98	A-33	A-32	124.39	124.10	1.00	0.00	3.50	200.36	0.00	26	16.26	2.65	130.90	130.88	133.55
L-A-54	Circular	2197+99.87	A-34	MH-7	124.23	123.97	1.00	0.00	3.50	263.57	0.00	32	15.76	3.52	130.74	130.64	130.77
L-A-52	Circular	2203+99.84	A-35	MH-6	125.00	124.56	1.00	0.00	2.50	339.95	0.00	16	15.71	3.29	130.97	130.92	129.54
L-A-52	Trapezoidal	2203+99.84	A-35	MH-6	129.04	130.61	1.00	26.00	0.50	339.95	0.00	8	16.70	1.52	130.97	130.92	129.54
L-A-61	Circular	2197+75.87	A-36	A-34	125.27	125.23	1.00	0.00	2.50	40.99	0.00	17	16.00	3.44	130.77	130.74	132.00
L-A-60	Circular	2200+59.70	A-37	A-36	126.06	125.77	1.00	0.00	2.00	287.37	0.00	10	16.01	3.28	131.12	130.77	131.90
L-A-59	Circular	2203+43.32	A-38	A-37	126.85	126.56	1.00	0.00	1.50	287.16	0.00	-5	19.86	2.23	131.47	131.12	133.00
L-A-62	Circular	2123+74.32	A-39	A-40	135.50	134.94	1.00	0.00	1.50	190.00	0.00	5	17.20	2.98	139.75	139.72	140.00
L-A-62	Trapezoidal	2123+74.32	A-39	A-40	138.68	138.49	1.00	5.00	0.50	190.00	0.00	1	16.22	0.37	139.75	139.72	140.00
L-A-9	Rectangular	2133+99.95	A-4	EX-6	132.21	132.11	1.00	5.00	2.00	82.87	0.00	46	17.08	4.59	137.02	136.94	136.45
L-A-63	Circular	2125+64.32	A-40	A-41	134.94	134.35	1.00	0.00	1.50	200.20	0.00	11	17.18	5.95	139.72	139.59	140.00
L-A-63	Trapezoidal	2125+64.32	A-40	A-41	138.49	138.00	1.00	5.00	0.50	200.20	0.00	3	16.25	0.75	139.72	139.59	140.00
L-A-64	Circular	2127+64.32	A-41	A-42	133.85	133.28	1.00	0.00	2.00	200.20	0.00	18	17.16	5.66	139.59	139.29	138.50
L-A-65	Circular	2129+64.32	A-42	A-43	133.28	132.39	1.00	0.00	2.00	299.43	0.00	19	17.17	5.89	139.29	138.56	139.62
L-A-66	Circular	2132+63.53	A-43	A-44	131.90	131.35	1.00	0.00	2.50	277.61	0.00	21	17.17	4.42	138.56	138.11	137.50
L-A-67	Circular	2135+40.00	A-44	MH-9	130.85	130.79	1.00	0.00	3.00	45.00	0.00	32	17.15	4.50	138.11	138.03	137.00
L-A-69	Circular	2141+00.00	A-45	A-46	129.96	129.37	1.00	0.00	3.00	400.00	0.00	34	17.16	4.80	137.14	136.42	137.87
L-A-69	Trapezoidal	2141+00.00	A-45	A-46	137.37	135.77	1.00	36.00	0.50	400.00	0.00	0	0.00	0.00	137.14	136.42	137.87
L-A-72	Circular	2145+00.00	A-46	MH-10	128.87	128.71	1.00	0.00	3.50	164.47	0.00	42	17.10	4.36	136.42	136.28	136.27
L-A-72	Trapezoidal	2145+00.00	A-46	MH-10	135.77	136.34	1.00	38.00	0.50	164.47	0.00	1	16.61	0.32	136.42	136.37	136.27
L-A-75	Circular	2150+00.00	A-47	A-48	127.88	127.28	1.00	0.00	4.00	600.00	0.00	64	15.90	5.10	135.75	134.74	135.92
L-A-76	Circular	2156+00.00	A-48	A-52	127.28	126.68	1.00	0.00	4.00	600.00	0.00	69	15.91	5.49	134.74	133.62	135.22
L-A-70	Circular	2143+00.00	A-49	A-50	132.02	130.86	1.00	0.00	1.50	400.00	0.00	8	16.30	4.51	138.77	136.52	137.97
L-A-70	Trapezoidal	2143+00.00	A-49	A-50	135.00	134.50	1.00	0.00	2.00	400.00	0.00	0	16.34	0.19	138.77	136.52	137.97
L-A-11	Rectangular	2137+49.94	A-5	EX-7	130.85	130.75	1.00	5.00	3.00	79.71	0.00	69	17.00	4.83	136.75	136.65	136.07

Table 7.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (100-Year) - Outfalls 1-4

Model: 100YR_SegE_Mitigation Alt. 1.xp **10/29/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-A-73	Circular	2147+00.00	A-50	MH-10	129.86	129.71	1.00	0.00	2.50	54.00	0.00	33	16.25	6.59	136.52	136.28	137.60
L-A-71	Circular	2151+00.00	A-51	A-50	132.02	130.86	1.00	0.00	1.50	400.00	0.00	8	16.33	4.45	138.72	136.52	137.05
L-A-71	Trapezoidal	2151+00.00	A-51	A-50	135.00	134.50	1.00	0.00	2.00	400.00	0.00	0	16.36	0.19	138.72	136.52	137.05
L-A-78	Circular	2162+00.00	A-52	A-53	126.68	125.79	1.00	0.00	4.00	600.00	0.00	89	16.20	7.03	133.62	132.33	134.52
L-A-80	Circular	2168+00.00	A-53	E-8	125.79	125.17	1.00	0.00	4.00	414.73	0.00	109	16.23	8.69	132.33	131.73	134.52
L-A-82	Rectangular	2177+00.00	A-54	A-59	123.92	123.48	1.00	8.00	5.00	440.58	0.00	134	18.61	3.34	131.54	131.37	134.17
L-A-88	Circular	2186+00.00	A-55	MH-11	123.70	123.60	1.00	0.00	2.50	68.57	0.00	7	16.25	2.47	131.23	131.23	133.12
L-A-77	Circular	2162+35.58	A-56	A-52	128.23	128.18	1.00	0.00	2.50	35.00	0.00	24	17.18	4.84	133.67	133.62	132.00
L-A-79	Circular	2168+35.58	A-57	A-53	127.86	127.79	1.00	0.00	2.00	35.00	0.00	17	16.25	5.25	132.34	132.33	132.00
L-A-81	Circular	2177+35.58	A-58	A-54	126.00	125.95	1.00	0.00	2.50	35.00	0.00	23	16.25	4.83	131.54	131.54	132.00
L-A-83	Rectangular	2181+40.68	A-59	MH-11	123.48	123.09	1.00	8.00	5.00	390.97	0.00	134	18.60	3.35	131.37	131.23	134.65
L-A-28	Circular	2124+39.96	A-6	A-7	134.65	134.09	1.00	0.00	1.50	190.06	0.00	4	16.00	2.58	137.99	137.87	138.29
L-A-28	Trapezoidal	2124+39.96	A-6	A-7	137.79	136.98	1.00	0.00	0.50	190.06	0.00	0	16.36	0.29	137.99	137.87	138.29
L-A-90	Rectangular	2185+67.08	A-60	EX-15	123.05	122.95	2.00	5.00	4.00	102.50	0.00	138	18.64	6.88	131.15	130.97	131.00
L-A-86	Circular	2193+50.00	A-61	MH-12	125.69	124.97	1.00	0.00	2.00	363.08	0.00	6	15.67	3.24	131.11	131.15	132.59
L-A-84	Circular	2198+00.00	A-62	A-63	127.50	126.62	1.00	0.00	1.50	300.20	0.00	6	16.00	3.50	131.13	131.12	131.02
L-A-85	Circular	2195+00.00	A-63	A-61	126.62	126.18	1.00	0.00	1.50	150.18	0.00	-6	16.00	3.66	131.12	131.11	132.07
L-A-29	Circular	2126+29.95	A-7	A-8	134.09	133.50	1.00	0.00	1.50	200.07	0.00	7	15.94	4.12	137.87	137.83	139.00
L-A-29	Trapezoidal	2126+29.95	A-7	A-8	136.98	136.00	1.00	5.00	1.00	200.07	0.00	4	16.30	0.78	137.87	137.83	139.00
L-A-30	Circular	2128+29.95	A-8	A-9	133.00	132.61	1.00	0.00	2.00	200.25	0.00	13	15.94	4.01	137.83	137.47	137.50
L-A-30	Trapezoidal	2128+29.95	A-8	A-9	136.00	137.00	1.00	0.00	0.50	200.25	0.00	1	16.46	0.99	137.83	137.47	137.50
L-A-31	Circular	2130+29.95	A-9	A-10	132.11	131.89	1.00	0.00	2.50	218.51	0.00	16	15.94	3.17	137.47	137.27	139.00
L-A-31	Trapezoidal	2130+29.95	A-9	A-10	137.00	135.50	1.00	0.00	0.50	218.51	0.00	1	16.45	0.50	137.47	137.27	139.00
L-B-1	Circular	2203+00.00	B-1	B-2	126.98	126.25	1.00	0.00	1.50	250.02	0.00	3	16.04	2.56	127.78	127.44	130.67
OL-B-1	Trapezoidal	2203+00.00	B-1	B-3	130.17	126.80	1.00	100.00	0.50	200.00	0.00	0	0.00	0.00	126.57	126.57	130.67
L-B-19	Circular	2215+50.00	B-10	MH-17	124.50	123.80	1.00	0.00	2.00	242.88	0.00	17	17.01	5.51	129.82	128.88	127.50
L-B-24	Circular	2212+99.84	B-11	MH-18	123.00	122.95	1.00	0.00	3.00	48.55	0.00	28	17.00	4.67	128.87	128.82	129.91
L-B-26	Circular	2215+49.83	B-12	MH-19	122.85	122.69	1.00	0.00	1.50	57.22	0.00	8	16.89	4.49	128.70	128.70	127.89
L-B-26	Trapezoidal	2215+49.83	B-12	MH-19	127.39	128.47	1.00	100.00	0.50	57.22	0.00	8	16.66	0.75	128.70	128.70	127.89
L-B-28	Circular	2217+63.59	B-13	MH-20	122.31	121.95	1.00	0.00	2.00	114.44	0.00	14	16.25	4.33	128.88	128.55	134.13
L-B-31	Circular	2226+61.23	B-14	MH-22	120.51	120.34	1.00	0.00	2.50	82.38	0.00	23	16.25	4.63	127.75	127.52	131.62
L-B-34	Circular	2237+42.45	B-15	MH-24	119.72	119.52	1.00	0.00	2.00	91.98	0.00	16	16.25	5.14	125.81	125.38	129.77
L-B-36	Circular	2219+23.88	B-16	B-17	122.27	121.98	1.00	0.00	2.00	138.10	0.00	2	16.01	1.70	125.64	125.63	128.27
L-B-37	Circular	2220+61.73	B-17	B-18	121.98	121.71	1.00	0.00	2.00	133.13	0.00	4	16.01	2.48	125.63	125.60	127.72
L-B-38	Circular	2221+94.66	B-18	B-19	121.21	120.94	1.00	0.00	2.50	136.19	0.00	6	16.01	2.32	125.60	125.58	127.19
L-B-39	Circular	2223+30.73	B-19	B-20	120.44	120.32	1.00	0.00	3.00	69.09	0.00	8	16.01	1.14	125.58	125.58	126.64
L-B-2	Circular	2205+50.00	B-2	MH-14	126.25	126.18	1.00	0.00	1.50	25.89	0.00	7	16.25	4.98	127.44	127.23	129.75
L-B-2	Trapezoidal	2205+50.00	B-2	MH-14	129.25	129.30	1.00	26.00	0.50	25.89	0.00	0	0.00	0.00	127.44	127.44	129.75
L-B-40	Circular	2223+99.80	B-20	B-21	120.32	120.11	1.00	0.00	3.00	149.31	0.00	11	16.01	1.75	125.58	125.55	126.36
L-B-41	Circular	2225+49.09	B-21	MH-25	120.11	119.94	1.00	0.00	3.00	107.21	0.00	13	16.01	1.89	125.55	125.52	126.81
L-B-43	Circular	2229+17.92	B-22	B-23	119.06	118.86	1.00	0.00	3.50	132.68	0.00	15	16.01	1.53	125.44	125.42	126.83
L-B-44	Circular	2230+51.50	B-23	B-24	118.86	118.66	1.00	0.00	3.50	124.85	0.00	17	16.01	1.72	125.42	125.39	126.36
L-B-45	Circular	2231+77.36	B-24	B-25	118.16	118.06	1.00	0.00	4.00	94.33	0.00	21	16.01	1.64	125.39	125.37	126.11
L-B-47	Circular	2232+71.79	B-25	B-27	118.06	117.83	1.00	0.00	4.00	234.81	0.00	27	16.01	2.15	125.37	125.31	126.44
L-B-46	Circular	2232+72.57	B-26	B-25	120.85	120.58	1.00	0.00	1.50	44.56	0.00	5	16.25	3.56	125.47	125.37	126.00
L-B-48	Circular	2235+06.59	B-27	MH-26	117.83	117.76	1.00	0.00	4.00	71.21	0.00	31	16.01	2.45	125.31	125.28	126.68
L-B-50	Circular	2237+15.12	B-28	MH-27	117.62	117.40	1.00	0.00	4.00	78.08	0.00	33	16.01	2.58	125.22	125.19	128.80
L-B-55	Circular	2239+99.76	B-29	MH-29	117.53	117.42	1.00	0.00	4.00	108.51	0.00	47	16.63	3.72	125.24	125.13	129.79
L-B-3	Circular	2205+75.55	B-3	MH-14	123.80	123.68	1.00	0.00	2.00	46.11	0.00	20	16.25	6.31	126.57	126.22	127.30
L-B-3	Trapezoidal	2205+75.55	B-3	MH-14	126.80	129.30	1.00	100.00	0.50	46.11	0.00	0	0.00	0.00	126.57	126.57	127.30
L-B-54	Circular	2243+99.75	B-30	B-29	117.93	117.53	1.00	0.00	4.00	399.90	0.00	44	16.77	3.47	125.57	125.24	129.79
L-B-62	Rectangular	2238+57.26	B-31	MH-28	116.90	116.88	2.00	7.00	5.00	45.02	0.04	255	16.25	3.64	125.19	125.16	129.00
L-B-53	Circular	2248+51.07	B-32	B-30	118.38	117.93	1.00	0.00	4.00	451.71	0.10	38	17.14	3.02	125.82	125.57	127.28
L-B-56	Circular	2246+11.81	B-33	MH-30	120.74	119.80	1.00	0.00	2.50	313.78	0.00	4	16.26	1.80	125.45	125.42	129.00
L-B-63	Circular	2237+85.19	B-34	B-31	116.95	116.90	2.00	0.00	4.50	108.22	0.05	170	18.15	10.69	125.62	125.19	129.90
L-B-57	Circular	2242+55.19	B-35	MH-30	119.55	119.30	1.00	0.00	3.00	120.47	0.00	21	16.25	3.00	125.54	125.42	131.02
L-B-52	Circular	2254+89.69	B-36	B-32	119.52	118.88	1.00	0.00	3.50	639.00	0.00	34	17.14	3.50	126.29	125.82	126.11
L-B-5	Rectangular	2208+00.00	B-37	B-38	119.91	119.21	1.00	8.00	5.00	699.93	0.00	-116	16.38	3.68	125.69	125.87	129.58

Table 7.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (100-Year) - Outfalls 1-4

Model: 100YR_SegE_Mitigation Alt. 1.xp

10/29/2009

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-B-6	Rectangular	2215+00.00	B-38	B-39	119.21	118.86	1.00	8.00	5.00	349.63	0.00	107	19.52	3.36	125.87	125.97	130.15
L-B-6	Trapezoidal	2215+00.00	B-38	B-39	128.73	127.50	1.00	26.00	0.50	349.63	0.00	0	0.00	0.00	125.97	125.97	130.15
L-B-7	Rectangular	2218+50.00	B-39	B-40	118.86	118.71	1.00	8.00	5.00	149.93	0.00	111	19.67	3.16	125.97	126.00	128.00
L-B-7	Trapezoidal	2218+50.00	B-39	B-40	127.50	128.03	1.00	26.00	0.50	149.93	0.00	0	0.00	0.00	125.97	125.97	128.00
L-B-22	Circular	2206+49.84	B-4	B-5	124.75	124.62	1.00	0.00	2.50	87.78	0.00	29	17.05	5.84	130.17	130.16	129.39
L-B-22	Trapezoidal	2206+49.84	B-4	B-5	128.89	129.06	1.00	62.00	0.50	87.78	0.00	17	16.72	1.55	130.17	130.16	129.39
L-B-8	Rectangular	2220+00.00	B-40	MH-15	118.71	118.41	1.00	8.00	5.00	299.54	0.00	111	19.55	3.07	126.00	126.05	129.50
L-B-10	Rectangular	2227+00.00	B-41	B-42	118.01	117.81	1.00	8.00	5.00	199.88	0.00	113	19.53	2.82	126.12	126.14	128.18
L-B-10	Trapezoidal	2227+00.00	B-41	B-42	127.68	126.98	1.00	26.00	0.50	199.88	0.00	0	0.00	0.00	126.14	126.14	128.18
L-B-12	Rectangular	2229+00.00	B-42	B-44	117.81	117.26	1.00	8.00	5.00	549.90	0.00	117	19.42	2.92	126.14	126.16	127.48
L-B-11	Circular	2229+00.00	B-43	B-42	122.50	122.36	1.00	0.00	2.00	49.00	0.00	23	16.26	7.41	126.63	126.14	126.50
L-B-13	Rectangular	2234+50.00	B-44	B-45	117.26	117.11	1.00	8.00	5.00	150.00	0.10	119	19.37	2.97	126.16	126.16	127.03
L-B-15	Rectangular	2236+00.00	B-45	MH-16	117.11	117.02	1.00	8.00	5.00	93.01	0.10	122	19.26	3.04	126.16	126.16	126.13
L-B-14	Circular	2236+00.00	B-46	B-45	121.00	120.90	1.00	0.00	2.00	49.00	0.00	13	16.34	4.10	126.32	126.16	125.00
L-B-87	Rectangular	2238+00.00	B-47	MH-16	117.12	117.02	1.00	5.00	5.00	107.15	0.00	130	17.14	5.18	126.29	126.16	126.83
L-B-93	Circular	2253+50.00	B-48	B-57	122.45	122.25	1.00	0.00	1.50	69.59	0.00	3	16.00	2.32	127.14	127.12	147.45
L-B-81	Circular	2250+50.00	B-49	MH-40	123.21	123.00	1.00	0.00	1.50	73.76	0.00	6	16.00	3.48	127.14	127.07	143.53
L-B-23	Circular	2207+37.62	B-5	B-11	124.62	123.50	1.00	0.00	2.50	562.35	0.00	26	17.01	5.30	130.16	128.87	130.50
L-B-92	Circular	2247+50.00	B-50	B-55	122.20	122.00	1.00	0.00	1.50	67.32	0.00	6	16.00	3.45	127.04	126.97	136.52
L-B-91	Circular	2244+52.35	B-51	B-54	123.15	123.00	1.00	0.00	1.50	55.53	0.00	6	16.00	3.54	126.88	126.81	130.55
L-B-90	Circular	2241+50.00	B-52	MH-42	124.38	124.25	1.00	0.00	1.50	48.28	0.00	6	16.00	4.07	126.65	126.57	128.87
L-B-88	Circular	2239+25.37	B-53	MH-41	123.59	123.50	1.00	0.00	1.50	33.83	0.00	5	16.00	3.48	126.40	126.37	128.07
L-B-85	Rectangular	2244+00.40	B-54	MH-42	117.71	117.43	1.00	5.00	5.00	288.08	0.00	113	17.15	4.52	126.81	126.57	126.73
L-B-84	Rectangular	2246+50.00	B-55	B-54	117.96	117.71	1.00	5.00	5.00	249.44	0.00	100	17.16	3.98	126.97	126.81	125.78
L-B-83	Circular	2248+88.78	B-56	B-55	118.19	117.96	1.00	0.00	4.50	238.64	0.00	62	17.34	3.85	127.05	126.97	127.00
L-B-79	Circular	2252+70.00	B-57	MH-39	118.55	118.43	1.00	0.00	4.50	127.53	0.00	52	15.61	3.29	127.12	127.10	125.82
L-B-76	Circular	134+95.99	B-58	MH-37	118.70	118.68	1.00	0.00	4.50	30.20	0.00	47	17.57	2.93	127.14	127.14	127.00
L-B-75	Circular	133+95.00	B-59	B-58	118.80	118.70	1.00	0.00	4.00	101.07	0.00	42	15.61	3.33	127.14	127.14	127.00
L-B-75	Trapezoidal	133+95.00	B-59	B-58	125.04	125.50	1.00	100.00	0.50	101.07	0.00	27	17.81	0.72	127.14	127.14	127.00
L-B-21	Circular	2210+40.78	B-6	MH-18	123.59	122.98	1.00	0.00	1.50	271.53	0.00	6	16.00	3.61	129.29	128.82	131.29
L-B-74	Circular	132+58.23	B-60	B-59	118.93	118.80	1.00	0.00	4.00	136.78	0.00	43	15.64	3.41	127.14	127.14	125.09
L-B-74	Trapezoidal	132+58.23	B-60	B-59	124.59	125.04	1.00	50.00	0.50	136.78	0.00	19	17.80	0.81	127.14	127.14	125.09
L-B-73	Circular	131+55.11	B-61	B-60	119.00	118.93	1.00	0.00	4.00	103.43	0.00	37	15.78	2.92	127.14	127.14	125.71
L-B-72	Circular	129+60.43	B-62	B-61	119.24	119.00	1.00	0.00	3.50	195.84	0.00	32	15.70	3.33	127.14	127.14	125.14
L-B-70	Circular	128+19.55	B-63	MH-36	119.37	119.28	1.00	0.00	3.50	96.25	0.00	31	15.80	3.17	127.13	127.14	126.00
L-B-68	Circular	124+89.71	B-64	MH-35	119.75	119.58	1.00	0.00	3.00	117.70	0.00	23	15.98	3.19	126.98	127.06	125.50
Link749	Trapezoidal	124+89.71	B-64	Node755	0.05	0.00	1.00	0.00	0.05	10.00	0.00	45	16.56	0.00	##########	##########	125.50
L-B-66	Circular	123+16.86	B-65	MH-34	120.51	120.34	1.00	0.00	2.50	173.43	0.00	7	15.89	2.47	127.01	126.99	127.31
L-B-16	Circular	2208+45.57	B-7	B-8	126.81	126.61	1.00	0.00	1.50	200.00	0.00	4	16.01	2.13	129.67	129.47	130.32
L-B-17	Circular	2210+45.57	B-8	B-9	126.61	126.00	1.00	0.00	1.50	200.16	0.00	7	16.01	4.15	129.47	128.98	131.02
L-B-18	Circular	2212+45.57	B-9	MH-17	125.50	125.32	1.00	0.00	2.00	63.80	0.00	12	16.01	4.83	128.98	128.88	128.50
BF63-BF61	Natural		B-F63	Node458	123.30	123.26	1.00	5.00	5.10	40.00	0.10	4	15.54	2.13	126.65	126.65	128.91
BF63-BF65	Circular		B-F63	B-F65	123.30	123.00	3.00	0.00	2.50	90.00	0.33	139	17.12	9.43	126.65	125.50	128.91
BF63-BF65	Trapezoidal		B-F63	B-F65	128.41	128.41	1.00	100.00	0.50	92.00	0.00	0	0.00	0.00	125.50	125.50	128.91
L-C-8	Circular	142+00.00	C-1	MH-45	120.34	120.13	1.00	0.00	3.00	209.71	0.12	23	17.22	3.26	126.35	126.34	125.58
L-C-8	Trapezoidal	142+00.00	C-1	MH-45	125.08	125.50	1.00	36.00	0.50	209.71	0.00	13	17.00	1.71	126.35	126.34	125.58
L-C-5	Circular	157+00.00	C-10	C-12	117.86	117.36	1.00	0.00	3.50	500.01	0.00	40	16.29	4.02	122.00	121.27	124.50
L-C-13	Circular	162+00.27	C-11	C-13	116.36	115.81	1.00	0.00	4.00	553.84	0.00	71	16.26	5.64	122.04	120.69	124.50
L-C-6	Circular	162+00.00	C-12	C-14	116.86	116.20	1.00	0.00	4.00	553.95	0.12	59	16.28	4.50	121.27	120.41	124.50
L-C-14	Circular	167+53.42	C-13	C-14	115.81	115.70	1.00	0.00	4.00	86.00	0.00	87	16.26	6.71	120.69	120.41	125.27
L-C-7	Rectangular	167+53.31	C-14	C-15	114.37	114.27	1.00	6.00	5.00	129.44	0.00	161	16.27	5.36	120.41	120.22	125.27
D31-D33	Rectangular	168+82.59	C-15	D33	114.27	114.07	1.00	6.00	5.00	352.00	0.00	180	16.27	5.99	120.22	119.57	122.43
L-C-1	Circular	142+00.00	C-2	C-1	120.50	120.34	1.00	0.00	2.50	157.92	0.10	12	17.17	2.51	126.40	126.35	125.09
L-C-9	Circular	147+00.00	C-3	C-5	119.00	118.10	1.00	0.00	3.50	500.00	0.18	31	16.25	4.08	123.88	123.39	125.30
L-C-2	Circular	147+00.00	C-4	C-3	119.92	119.50	1.00	0.00	3.00	141.60	0.35	19	16.25	4.26	123.99	123.88	124.50
L-C-10	Circular	152+00.00	C-5	C-7	117.60	117.36	1.00	0.00	4.00	163.00	0.15	43	16.26	3.45	123.39	123.24	124.50
L-C-3	Circular	151+99.80	C-6	C-8	118.90	118.70	1.00	0.00	3.00	163.20	0.12	20	16.25	3.38	122.40	122.27	124.50
L-C-11	Circular	153+63.00	C-7	C-9	117.36	116.96	1.00	0.00	4.00	337.00	0.12	50	16.26	3.97	123.24	122.83	126.50
L-C-4	Circular	153+63.00	C-8	C-10	118.20	117.86	1.00	0.00	3.50	337.00	0.00	30	16.28	3.20	122.27	122.00	126.50
L-C-12	Circular	157+00.00	C-9	C-11	116.96	116.36	1.00	0.00	4.00	500.28	0.00	57	16.26	4.53	122.83	122.04	124.50

Table 7.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (100-Year) - Outfalls 1-4

Model: 100YR_SegE_Mitigation Alt. 1.xp **10/29/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-D-1	Circular	120+03.77	D-1	D-2	122.07	121.87	1.00	0.00	2.50	202.16	0.00	13	16.50	3.16	124.09	123.89	127.40
L-D-6	Circular	107+10.26	D-10	D-12	119.21	118.98	1.00	0.00	4.00	234.61	0.00	56	16.29	4.91	122.61	122.25	128.37
L-D-13	Circular	107+10.00	D-11	MH-43	114.92	114.91	1.00	0.00	5.50	32.14	0.00	34	16.02	1.45	120.45	120.44	128.65
L-D-7	Circular	104+77.79	D-12	D-14	118.98	118.69	1.00	0.00	4.00	295.25	0.00	62	16.29	5.71	122.25	121.58	128.18
L-D-16	Circular	104+79.77	D-13	D-15	114.33	114.24	1.00	0.00	6.00	292.54	0.00	38	16.02	1.35	120.39	120.33	128.25
L-D-8	Circular	101+84.93	D-14	D-15	118.69	118.60	1.00	0.00	4.00	86.00	0.00	72	16.26	7.53	121.58	121.17	127.94
L-D-17	**Circular**	**101+84.93**	**D-15**	**D-17**	**114.24**	**114.19**	**1.00**	**0.00**	**6.00**	**169.57**	**0.00**	**112**	**16.03**	**3.94**	**120.33**	**120.19**	**127.94**
L-D-18	Circular	100+18.70	D-16	D-17	121.57	121.36	1.00	0.00	2.00	92.51	0.00	3	16.01	3.17	122.30	121.99	127.07
L-D-2	Circular	118+01.62	D-2	D-4	121.87	121.50	1.00	0.00	2.50	297.05	0.13	18	16.27	4.41	123.89	123.12	127.20
L-D-9	Circular	118+01.28	D-3	D-5	118.52	118.22	1.00	0.00	4.00	298.36	0.00	8	16.00	1.65	120.84	120.70	125.60
D32-D31	Circular		D32	C-15	116.63	116.28	1.00	0.00	2.50	71.00	0.00	9	16.25	4.01	120.26	120.22	122.43
D33-D35	Rectangular		D33	D35	114.07	113.90	1.00	6.00	5.00	258.00	0.00	198	16.27	6.58	119.57	119.03	122.71
D34-D33	Circular		D34	D33	117.79	116.59	1.00	0.00	2.00	71.00	0.00	9	16.25	6.60	119.65	119.57	123.04
D35-D37	**Rectangular**		**D35**	**D37**	**112.90**	**112.85**	**1.00**	**6.00**	**6.00**	**107.00**	**0.00**	**212**	**16.26**	**5.88**	**119.03**	**118.85**	**123.57**
D36-D35	Circular		D36	D35	118.77	116.92	1.00	0.00	1.50	71.00	0.00	8	16.25	8.85	119.75	119.03	123.57
D38-D36	Circular		D38	D36	120.50	119.50	1.00	0.00	1.50	73.00	0.00	4	16.01	6.16	121.08	120.08	123.50
L-D-3	Circular	115+04.60	D-4	D-6	120.00	119.66	1.00	0.00	4.00	342.19	0.10	27	16.27	2.51	123.12	123.01	127.00
L-D-10	Circular	115+02.93	D-5	D-7	118.22	117.88	1.00	0.00	4.00	340.52	0.00	17	16.01	2.80	120.70	120.54	126.85
L-D-4	Circular	111+62.95	D-6	D-8	119.66	119.46	1.00	0.00	4.00	204.56	0.00	39	16.28	3.47	123.01	122.87	126.64
L-D-11	Circular	111+62.66	D-7	D-9	115.88	115.52	1.00	0.00	5.00	205.63	0.00	26	16.02	1.37	120.54	120.51	126.77
L-D-5	Circular	109+58.73	D-8	D-10	119.46	119.21	1.00	0.00	4.00	250.39	0.00	47	16.28	4.15	122.87	122.61	126.51
L-D-12	Circular	109+58.93	D-9	D-11	115.52	115.42	1.00	0.00	5.00	247.58	0.00	30	16.02	1.56	120.51	120.45	128.88
L-E-1	Rectangular	100+98.69	E-1	E-7	124.71	124.66	1.00	7.00	4.00	50.00	0.00	106	16.75	3.78	131.82	131.81	132.00
L-E-10	Rectangular		E-10	E-11	120.77	120.65	1.00	8.00	5.00	124.96	0.00	-160	16.34	3.98	125.26	125.25	128.00
L-E100-P	Rectangular		E100-Pond	E-7	124.74	124.66	3.00	7.00	5.00	75.00	0.00	-421	16.33	0.99	131.81	131.81	132.00
L-E-11	Rectangular		E-11	E-12	120.65	120.48	1.00	8.00	5.00	167.88	0.00	-160	16.33	3.95	125.25	125.25	128.00
L-E-12	Rectangular		E-12	E-13	120.48	119.96	1.00	8.00	5.00	519.52	0.10	-161	16.33	3.87	125.25	125.59	130.00
L-E-13	Rectangular		E-13	B-37	119.96	119.91	1.00	8.00	5.00	50.00	0.00	-134	16.38	3.68	125.59	125.69	129.50
L-POND	Rectangular	111+95.97	E131-Pond	E-9	121.18	121.08	1.00	8.00	5.00	90.87	0.00	-160	16.35	3.77	125.28	125.27	128.00
L-E-2	Rectangular	101+10.82	E-2	E-7	124.71	124.66	1.00	7.00	4.00	50.00	0.00	105	16.50	3.81	131.82	131.81	132.00
L-E-3	Circular	112+52.05	E-3	E-6	121.33	121.26	1.00		4.50	50.00	0.14	61	16.25	5.64	125.29	125.29	128.00
L-E-4	Circular	113+06.59	E-4	E-6	121.33	121.26	1.00		4.50	50.00	0.14	69	16.25	5.52	125.29	125.29	128.00
L-E-6	Rectangular	112+79.05	E-6	E131-Pond	121.26	121.18	1.00		5.00	84.00	0.10	130	16.25	5.82	125.29	125.28	128.00
L-E-7	Rectangular	2172+18.93	E-7	E-8	124.66	124.40	1.00	8.00	5.00	260.00	0.00	-251	16.23	3.17	131.81	131.73	132.00
L-E-8	Rectangular	2172+18.71	E-8	A-54	124.40	123.92	1.00	8.00	5.00	477.31	0.00	-144	16.23	3.32	131.73	131.54	135.77
L-E-9	Rectangular		E-9	E-10	121.08	120.77	1.00	8.00	5.00	309.99	0.00	-160	16.34	4.09	125.27	125.26	128.00
L-A-1	Rectangular	2123+38.35	EX-1	A-1	132.84	132.81	1.00	4.00	2.00	61.68	0.00	4	17.08	0.55	137.20	137.20	138.33
L-A-1	Trapezoidal	2123+38.35	EX-1	A-1	136.86	136.31	1.00	15.00	0.50	61.68	0.00	2	16.84	0.78	137.20	137.20	138.33
L-A-15	Rectangular	2172+28.31	EX-10	A-24	127.94	127.47	1.00	6.00	3.00	490.43	0.00	50	16.32	3.52	131.01	130.83	133.20
L-A-17	Rectangular	2178+54.89	EX-11	A-25	127.33	127.16	1.00	6.00	3.00	188.09	0.00	56	16.31	3.94	130.82	130.80	134.26
L-A-19	Rectangular	2181+59.67	EX-12	A-26	127.06	125.29	1.00	6.00	3.00	163.30	0.00	61	16.31	5.71	130.79	130.78	133.75
L-A-21	Rectangular	2185+38.35	EX-13	EX-14	123.00	122.86	1.00	6.00	3.00	34.87	0.00	65	16.31	3.60	130.75	130.75	132.87
L-A-94	Circular	2185+68.27	EX-14	A-28	122.84	122.79	2.00	0.00	4.00	55.03	0.13	148	17.94	11.68	130.75	130.40	132.67
L-A-91	Rectangular	2185+67.08	EX-15	EX-19	122.95	122.86	2.00	5.00	4.00	87.33	0.00	138	18.64	6.89	130.97	130.84	134.40
L-A-26	Circular	2190+64.93	EX-16	EX-18	126.15	125.85	1.00	0.00	2.00	91.05	0.00	10	16.00	4.03	130.87	130.86	135.45
L-A-25	Circular	2195+54.30	EX-17	EX-20	124.69	124.55	1.00	0.00	3.00	91.84	0.00	18	16.46	2.55	130.91	130.90	137.31
L-A-22	Circular	2190+71.12	EX-18	EX-19	123.85	123.15	1.00	0.00	4.00	478.61	0.00	36	16.26	2.83	130.86	130.84	132.58
L-A-92	Rectangular	2185+67.55	EX-19	A-30	122.86	122.85	2.00	5.00	4.00	8.18	0.00	140	18.60	6.96	130.84	130.79	132.87
L-A-3	Rectangular	2124+82.97	EX-2	A-2	132.77	132.66	1.00	4.00	2.00	217.01	0.00	15	15.94	1.93	137.19	137.15	137.67
L-A-24	Circular	2195+55.99	EX-20	A-33	124.55	124.39	1.00	0.00	3.50	105.71	0.00	18	16.46	1.88	130.90	130.90	135.03
L-A-5	Rectangular	2127+85.97	EX-3	EX-4	132.60	132.48	1.00	5.00	2.00	270.90	0.00	27	15.94	2.67	137.14	137.06	137.52
L-A-5	Trapezoidal	2127+85.97	EX-3	EX-4	136.72	136.55	1.00	22.50	0.25	270.90	0.00	4	16.28	0.71	137.14	137.06	137.52
L-A-6	Rectangular	2130+56.87	EX-4	A-3	132.48	132.45	1.00	5.00	2.00	43.11	0.00	30	17.08	2.96	137.06	137.06	137.52
L-A-6	Trapezoidal	2130+56.87	EX-4	A-3	136.55	135.95	1.00	22.50	0.50	43.11	0.00	16	16.28	2.32	137.06	137.06	137.52
L-A-8	Rectangular	2131+85.55	EX-5	A-4	132.38	132.21	1.00	5.00	2.00	215.21	0.00	45	17.08	4.45	137.04	137.02	137.22
L-A-8	Trapezoidal	2131+85.55	EX-5	A-4	136.42	135.95	1.00	38.00	0.50	150.00	0.00	18	16.80	1.35	137.04	137.02	137.22
L-A-10	Rectangular	2134+82.74	EX-6	MH-2	131.11	130.94	1.00	5.00	3.00	173.21	0.00	62	17.03	4.13	136.94	136.78	137.22
L-A-12	Rectangular	2138+29.63	EX-7	EX-8	130.75	130.59	1.00	5.00	3.00	123.37	0.00	69	17.00	4.80	136.65	136.50	137.14
L-A-37	Rectangular	2139+52.95	EX-8	MH-3	130.59	130.20	1.00	5.00	3.00	298.68	0.00	71	17.00	5.16	136.50	136.08	137.14
L-A-13	Rectangular	2166+48.47	EX-9	A-23	128.51	128.18	1.00	6.00	3.00	351.53	0.00	38	16.25	3.04	131.21	131.13	134.00
L-A-33	Circular	2134+82.74	MH-1	EX-6	131.16	131.11	1.00	0.00	3.00	54.14	0.00	27	15.94	3.77	137.01	136.94	137.62

Table 7.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (100-Year) - Outfalls 1-4

Model: 100YR_SegE_Mitigation Alt. 1.xp

10/29/2009

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-A-74	Circular	2146+64.42	MH-10	A-47	128.21	127.88	1.00	0.00	4.00	335.61	0.00	62	15.90	4.89	136.28	135.75	138.00
L-A-74	Trapezoidal	2146+64.42	MH-10	A-47	136.49	135.42	1.00	38.00	0.50	335.61	0.00	0	0.00	0.00	136.28	135.75	138.00
L-A-89	Rectangular	2185+31.55	MH-11	A-60	123.09	123.05	2.00	5.00	4.00	44.00	0.00	138	18.67	6.87	131.23	131.15	133.36
L-A-87	Circular	2189+87.46	MH-12	A-55	124.97	124.20	1.00	0.00	2.00	387.99	0.00	6	20.97	3.00	131.15	131.23	133.68
E100	**Natural**	**2186+00.59**	**MH-13**	**E100-OUT**	**122.77**	**122.07**	**1.00**	**0.00**	**0.00**	**1206.00**	**0.00**	**243**	**17.04**	**2.40**	**129.85**	**128.39**	**146.49**
L-B-4	Circular	2205+75.55	MH-14	E-13	123.18	122.85	1.00	0.00	2.50	166.46	0.19	27	16.26	5.58	126.22	125.59	131.00
L-B-9	Rectangular	2223+00.00	MH-15	B-41	118.41	118.01	1.00	8.00	5.00	399.21	0.00	111	19.54	2.88	126.05	126.12	129.50
L-B-64	Circular	2236+92.92	MH-16	B-34	117.02	116.95	2.00	0.00	4.50	152.81	0.05	170	18.15	10.65	126.16	125.62	126.37
L-B-20	Circular	2213+09.24	MH-17	MH-18	120.80	120.48	1.00	0.00	4.00	223.24	0.00	26	17.01	2.80	128.88	128.82	130.55
L-B-25	Circular	2213+12.52	MH-18	MH-19	119.98	119.69	1.00	0.00	4.50	198.54	0.00	55	17.01	3.47	128.82	128.70	130.00
L-B-27	Circular	2215+13.89	MH-19	MH-20	119.69	119.44	1.00	0.00	4.50	205.31	0.00	60	16.91	3.77	128.70	128.55	129.10
L-A-34	Rectangular	2136+56.22	MH-2	A-5	130.94	130.85	1.00	5.00	3.00	93.59	0.00	66	17.01	4.47	136.78	136.75	137.22
L-A-34	Trapezoidal	2136+56.22	MH-2	A-5	135.80	135.57	1.00	38.00	0.50	93.59	0.00	25	16.86	1.53	136.78	136.75	137.22
L-B-29	Circular	2217+19.58	MH-20	MH-21	119.44	118.96	1.00	0.00	4.50	384.54	0.00	68	16.66	4.27	128.55	128.12	128.36
L-B-30	Circular	2221+29.13	MH-21	MH-22	118.96	118.34	1.00	0.00	4.50	542.05	0.00	68	16.66	4.27	128.12	127.52	133.76
L-B-32	Circular	2226+58.23	MH-22	MH-23	118.34	117.73	1.00	0.00	4.50	509.68	0.00	87	16.50	5.46	127.52	126.53	133.38
L-B-33	Circular	2231+81.08	MH-23	MH-24	117.73	117.02	1.00	0.00	4.50	605.28	0.00	87	16.50	5.47	126.53	125.38	127.00
L-B-35	Circular	2237+86.60	MH-24	B-31	117.02	116.95	1.00	0.00	4.50	71.00	0.00	102	16.45	6.38	125.38	125.19	129.65
L-B-42	Circular	2226+56.48	MH-25	B-22	119.94	119.56	1.00	0.00	3.00	260.29	0.00	13	16.01	1.82	125.52	125.44	126.85
L-B-49	Circular	2235+77.80	MH-26	B-28	117.76	117.62	1.00	0.00	4.00	137.32	0.00	31	16.01	2.45	125.28	125.22	126.96
L-B-51	Circular	2237+93.19	MH-27	MH-28	117.40	117.27	1.00	0.00	4.00	81.35	0.00	33	16.01	2.58	125.19	125.16	130.21
L-B-61	Rectangular	2238+74.53	MH-28	MH-29	116.88	116.85	2.00	7.00	5.00	43.45	0.07	288	16.25	4.10	125.16	125.13	130.45
L-B-60	Rectangular	2238+91.32	MH-29	MH-32	116.85	116.84	2.00	7.00	5.00	10.62	0.09	334	16.26	4.75	125.13	124.92	130.09
L-A-38	Rectangular	2142+51.63	MH-3	A-13	130.20	130.05	1.00	6.00	3.00	148.36	0.00	76	15.91	4.73	136.08	136.02	137.14
L-A-38	Trapezoidal	2142+51.63	MH-3	A-13	135.36	134.92	1.00	38.00	0.50	148.36	0.00	26	16.67	1.60	136.08	136.02	137.14
L-B-58	Circular	2242+89.73	MH-30	MH-31	118.80	117.88	1.00	0.00	3.50	367.27	0.00	25	16.25	2.59	125.42	125.22	130.85
L-B-59	Circular	2239+20.45	MH-31	B-31	117.88	117.82	1.00	0.00	3.50	64.08	0.00	25	16.25	2.59	125.22	125.19	129.83
E131	**Natural**	**2238+94.89**	**MH-32**	**E131-OUT**	**116.84**	**117.85**	**1.00**	**0.00**	**0.00**	**475.00**	**-0.21**	**330**	**16.35**	**1.37**	**124.92**	**124.83**	**131.92**
L-B-65	Circular	122+51.64	MH-33	B-65	120.62	120.51	1.00	0.00	2.00	162.07	0.11	5	18.61	2.41	127.00	127.01	128.00
L-B-67	Circular	123+98.05	MH-34	B-64	120.34	120.25	1.00	0.00	2.50	91.77	0.00	7	15.89	2.83	126.99	126.98	127.90
L-B-69	Circular	126+07.40	MH-35	B-63	119.58	119.37	1.00	0.00	3.50	212.15	0.00	-18	16.77	2.12	127.06	127.13	125.80
L-B-71	Circular	129+15.80	MH-36	B-62	119.28	119.24	1.00	0.00	3.50	44.83	0.00	29	15.73	2.95	127.14	127.14	125.50
L-B-77	Circular	135+26.15	MH-37	MH-38	118.68	118.60	1.00	0.00	4.50	89.68	0.00	47	17.57	2.93	127.14	127.13	127.20
L-B-78	Circular	2253+23.59	MH-38	B-57	118.60	118.55	1.00	0.00	4.50	54.83	0.00	47	17.57	2.94	127.13	127.12	127.00
L-B-80	Circular	2251+42.33	MH-39	MH-40	118.43	118.28	1.00	0.00	4.50	158.15	0.00	55	17.41	3.43	127.10	127.07	127.00
L-A-41	Rectangular	2145+51.15	MH-4	MH-5	129.86	129.47	1.00	6.00	3.00	300.00	0.00	89	15.91	5.54	135.83	135.40	136.79
L-B-82	Circular	2249+83.35	MH-40	B-56	118.28	118.19	1.00	0.00	4.50	95.34	0.00	57	17.34	3.56	127.07	127.05	127.50
L-B-86	Rectangular	2238+89.55	MH-41	B-47	117.21	117.12	1.00	5.00	5.00	89.64	0.00	116	17.14	4.61	126.37	126.29	127.06
L-B-89	Rectangular	2241+11.95	MH-42	MH-41	117.43	117.21	1.00	5.00	5.00	222.23	0.00	115	17.15	4.57	126.57	126.37	127.75
L-D-14	Circular	106+77.66	MH-43	MH-44	111.73	111.73	1.00	0.00	4.50	45.65	0.00	34	16.02	2.15	120.44	120.42	128.63
L-D-15	Circular	106+31.71	MH-44	D-13	114.89	114.83	1.00	0.00	5.50	150.88	0.00	35	16.02	1.46	120.42	120.39	128.54
L-B-94	Circular	139+90.34	MH-45	B-36	120.13	120.02	1.00	0.00	3.00	104.07	0.12	25	17.14	3.47	126.34	126.29	126.50
L-A-44	Rectangular	2148+51.15	MH-5	A-17	129.47	128.67	1.00	6.00	3.00	448.74	0.00	93	15.90	6.00	135.40	134.68	136.79
L-A-53	Circular	2200+59.37	MH-6	A-34	124.56	124.23	1.00	0.00	2.50	259.13	0.00	16	15.71	3.25	130.92	130.74	131.79
L-A-55	Circular	2195+35.93	MH-7	A-31	123.97	123.74	1.00	0.00	3.50	235.72	0.00	32	15.76	3.40	130.64	130.56	131.50
L-A-57	Circular	2189+99.92	MH-8	A-29	123.44	123.14	1.00	0.00	4.00	299.67	0.00	36	15.77	3.44	130.49	130.42	131.99
L-A-68	Circular	2135+40.00	MH-9	A-45	130.79	129.96	1.00	0.00	3.00	559.96	0.00	32	17.15	4.49	138.03	137.14	139.66
Link445	Circular		Node458	MH-33	0.05	0.00	1.00	0.00	0.05	10.00	0.00	4	18.62	8.72	126.65	127.00	128.91
Link445	Circular		Node458	MH-33	0.05	0.00	1.00	0.00	0.05	10.00	0.00	4	18.62	8.72	126.65	127.00	128.91

Table 8.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (100-Year) - Outfalls 5-6

Model: US290_Mit_SegD_SysA_Adj_SS.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 5																	
L_A-1	Circular	133+98.14	A-1	MH-A1	120.76	120.56	1.00	0.00	2.00	136.03	0.15	12	16.05	3.81	126.51	126.51	126.50
L_A-10	Rectangular	2276+83.33	A-10	A-12	115.30	114.98	1.00	5.00	4.00	216.70	0.15	122	16.04	6.07	121.95	121.46	123.86
L_A-10	Trapezoidal	2276+83.33	A-10	A-12	123.36	122.61	1.00	38.00	0.50	216.70	0.35	0	0.00	0.00	121.46	121.46	123.86
L_A-11	Rectangular	2278+74.79	A-11	A-13	116.44	115.65	1.00	5.00	3.00	524.58	0.15	87	16.08	5.75	121.79	120.31	124.44
L_A-11	Trapezoidal	2278+74.79	A-11	A-13	123.44	123.40	1.00	38.00	0.50	524.58	0.01	0	0.00	0.00	120.31	120.31	124.44
L_A-12	Rectangular	2279+00.00	A-12	MH-A3	114.98	114.50	1.00	5.00	4.00	319.11	0.15	132	16.05	6.96	121.46	121.33	123.11
L_A-13	Rectangular	2284+00.00	A-13	MH-A4	115.65	115.25	1.00	6.00	3.00	266.91	0.15	118	16.25	7.30	120.31	120.17	124.44
L_A-14	Circular	2289+00.00	A-14	MH-A5	116.12	115.55	1.00	0.00	2.50	379.56	0.15	20	16.27	5.09	120.86	120.79	123.68
L_A-15	Rectangular	2288+00.00	A-15	MH-A4	113.76	113.57	1.00	5.00	3.00	128.88	0.15	84	16.38	7.40	120.20	120.17	124.44
L_A-16	Circular	2292+50.00	A-16	A-14	117.14	116.62	1.00	0.00	2.00	349.97	0.15	15	16.27	5.04	121.84	120.86	122.34
L_A-16	Trapezoidal	2292+50.00	A-16	A-14	121.84	123.18	1.00	38.00	0.50	349.97	-0.38	0	0.00	0.00	121.84	121.84	122.34
L_A-17	Rectangular	2292+00.00	A-17	A-15	114.36	113.76	1.00	5.00	3.00	399.59	0.15	63	16.38	4.21	120.28	120.20	123.39
L_A-17	Trapezoidal	2292+00.00	A-17	A-15	122.89	123.94	1.00	38.00	0.50	399.59	-0.26	0	0.00	0.00	120.28	120.28	123.39
L_A-18	Rectangular	2296+49.68	A-18	A-17	115.04	114.36	1.00	4.00	3.00	449.68	0.15	44	16.38	3.73	120.67	120.28	121.81
L_A-18	Trapezoidal	2296+49.68	A-18	A-17	121.31	122.89	1.00	38.00	0.50	449.68	-0.35	0	0.00	0.00	120.67	120.67	121.81
L_A-19	Circular	2298+99.64	A-19	A-18	115.41	115.04	1.00	0.00	3.00	249.96	0.15	21	16.44	3.28	120.81	120.67	120.94
L_A-19	Trapezoidal	2298+99.64	A-19	A-18	120.44	121.31	1.00	38.00	0.50	249.96	-0.35	0	0.00	0.00	120.81	120.67	120.94
L_A-2	Rectangular	2256+01.79	A-2	A-4	119.43	118.83	1.00	4.00	3.00	403.17	0.15	30	16.05	2.46	126.48	125.63	126.46
L_A-21	Rectangular	131+82.58	A-21	MH-A10	113.33	113.23	1.00	5.00	5.00	100.00	0.10	143	16.25	9.87	120.89	120.87	125.50
L_A-22	Circular	132+80.91	A-22	MH-A10	114.33	114.23	1.00	0.00	4.00	100.00	0.10	55	16.25	4.34	120.88	120.87	125.50
L_A-23	Rectangular	122+26.28	A-23	MH-A7	122.60	122.16	1.00	8.00	4.00	262.00	0.17	35	22.39	1.44	125.81	125.83	129.80
L_A-24	Rectangular	121+93.38	A-24	MH-A8	122.59	122.17	1.00	8.00	4.00	322.00	0.13	32	17.27	1.54	125.37	125.33	128.50
L_A-24A	Trapezoidal	2205+87.24	A-24A	A-24	127.66	122.59	1.00	2.00	4.00	3453.00	0.15	17	17.89	1.29	129.29	125.37	132.00
L_A-24B	Trapezoidal	2156+18.61	A-24B	A-24A	132.98	127.66	1.00	2.00	2.00	5321.09	0.10	8	17.33	0.88	134.23	129.29	137.14
L_A-3	Circular	2260+00.00	A-3	A-5	119.75	119.00	1.00	0.00	2.50	500.14	0.15	16	16.36	3.32	125.12	124.59	125.58
L_A-3	Trapezoidal	2260+00.00	A-3	A-5	125.08	124.59	1.00	38.00	0.50	500.14	0.10	0	16.05	0.26	125.12	124.60	125.58
L_A-4	Rectangular	2260+00.00	A-4	A-6	118.83	118.04	1.00	5.00	3.00	525.73	0.15	70	16.04	4.66	125.63	124.95	125.41
L_A-5	Circular	2265+00.00	A-5	A-7	118.50	117.90	1.00	0.00	3.00	399.69	0.15	35	16.36	6.73	124.59	123.80	125.09
L_A-5	Trapezoidal	2265+00.00	A-5	A-7	124.59	123.99	1.00	38.00	0.50	399.69	0.15	0	16.26	0.06	124.59	123.99	125.09
L_A-6	Rectangular	2265+25.73	A-6	A-8	118.04	117.33	1.00	5.00	3.00	474.27	0.15	85	16.04	6.50	124.95	123.48	126.05
L_A-6	Trapezoidal	2265+25.73	A-6	A-8	125.55	123.66	1.00	38.00	0.50	474.27	0.40	0	0.00	0.00	123.48	123.48	126.05
L_A-7	Rectangular	2268+99.69	A-7	A-9	117.90	117.00	1.00	4.00	3.00	600.31	0.15	57	16.07	4.75	123.80	122.54	124.49
L_A-8	Rectangular	2270+00.00	A-8	A-10	116.33	115.30	1.00	5.00	4.00	683.35	0.15	111	16.04	5.51	123.48	121.95	124.16
L_A-9	Rectangular	2275+00.00	A-9	A-11	117.00	116.44	1.00	5.00	3.00	374.79	0.15	73	16.08	4.82	122.55	121.79	124.50
L_A-9	Trapezoidal	2275+00.00	A-9	A-11	123.50	123.44	1.00	38.00	0.50	374.79	0.02	0	0.00	0.00	121.79	121.79	124.50
L_BF-63	Circular	122+33.90	BF-63	MH-A6	123.30	123.00	3.00	0.00	3.00	90.25	0.33	29	26.61	1.61	125.91	125.88	129.70
L_E112-OUT	**Trapezoidal**		**E112-00**	**E112-OUT**	**110.46**	**110.28**	**1.00**	**10.00**	**9.00**	**150.00**	**0.12**	**389**	**17.21**	**2.79**	**115.81**	**115.63**	**120.00**
L_E112-01	Rectangular		E112-01	E112-00	112.30	110.46	1.00	10.00	5.00	1536.00	0.12	389	17.21	7.76	119.87	115.81	123.00
L_MH-A1	Circular	135+34.00	MH-A1	A-2	120.56	120.43	1.00	0.00	2.00	82.25	0.15	12	16.05	4.00	126.50	126.48	126.50
L_MH-A10	Rectangular	132+41.85	MH-A10	MH-A9	113.23	112.95	1.00	9.00	5.00	230.25	0.12	-186	16.33	5.03	120.87	120.84	125.50
L_MH-A3	Rectangular	2282+19.11	MH-A3	MH-A5	113.50	113.05	1.00	7.00	5.00	301.78	0.15	298	16.26	8.49	121.33	120.79	124.00
L_MH-A4	Rectangular	2285+97.62	MH-A4	E112-01	112.42	112.30	1.00	9.00	5.00	101.43	0.12	389	17.21	13.41	120.17	119.87	123.94
L_MH-A5	Rectangular	2285+20.66	MH-A5	MH-A4	112.78	112.42	1.00	9.00	5.00	294.40	0.12	338	17.71	7.50	120.79	120.17	125.13
L_MH-A6	Trapezoidal	121+63.75	MH-A6	A-23	123.00	122.60	1.00	2.00	4.00	217.00	0.18	35	22.31	1.92	125.88	125.81	129.31
L_MH-A6A	Trapezoidal	2206+27.66	MH-A6A	MH-A6	128.69	123.00	1.00	2.00	3.00	3195.00	0.18	34	17.67	1.82	130.78	125.88	132.50
L_MH-A6B	Trapezoidal	2156+34.38	MH-A6B	MH-A6A	134.00	128.69	1.00	2.00	2.00	5306.00	0.10	17	17.19	1.20	135.77	130.78	137.00
L_MH-A7	Trapezoidal	123+64.14	MH-A7	MH-A7A	122.16	121.99	1.00	2.00	4.00	173.00	0.10	35	22.48	1.27	125.83	125.81	129.40
L_MH-A7A	Rectangular		MH-A7A	MH-A7B	121.99	121.90	1.00	3.00	2.00	95.00	0.09	35	22.57	5.80	125.81	124.81	128.50
L_MH-A7B	Trapezoidal		MH-A7B	MH-A3	121.90	119.76	1.00	2.00	4.00	2762.85	0.08	35	23.08	1.72	124.81	121.33	128.50
L_MH-A8	Trapezoidal	123+06.59	MH-A8	MH-A9	122.17	121.70	1.00	2.00	4.00	3213.97	0.01	30	18.16	1.32	125.33	122.85	128.50
L_MH-A9	Rectangular	134+52.75	MH-A9	MH-A5	112.95	112.78	1.00	9.00	5.00	146.73	0.12	198	18.47	12.29	120.84	120.79	125.70
L_POND	Rectangular		POND	MH-A10	113.32	113.23	1.00	9.00	5.00	74.21	0.12	-380	16.30	3.36	120.87	120.87	122.00

Table 8.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (100-Year) - Outfalls 5-6

Model: US290_Mit_SegD_SysA_Adj_SS.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 6																	
L-A-2A	Trapezoidal		A-1A	A-2A	118.66	118.30	1.00	2.00	3.00	100.00	0.36	3	16.74	1.19	119.49	119.45	125.00
L-A-1A	Trapezoidal		A-1AA	A-1A	119.50	118.66	1.00	2.00	3.00	590.00	0.14	0	0.00	0.00	119.50	119.49	125.00
L-A-5A	Trapezoidal		A-2A	A-5A	118.30	116.90	1.00	2.00	3.00	452.00	0.31	6	16.73	0.83	119.45	119.44	125.00
L-A-8A	Trapezoidal		A-5A	A-8A	116.90	116.70	1.00	2.00	3.00	597.00	0.03	24	16.37	1.27	119.44	119.13	125.00
L-B-10A	Trapezoidal		A-8A	B-10A	116.70	115.70	1.00	2.00	3.00	805.00	0.12	29	16.47	1.06	119.13	118.74	125.00
L_AN-0	Circular	2365+49.72	AN-0	B-31	108.15	107.40	1.00	0.00	3.00	749.82	0.10	22	16.25	3.08	113.82	113.82	114.15
L_AS-0	Circular	2361+45.00	AS-0	B-32	108.45	107.68	1.00	0.00	3.00	515.00	0.15	30	16.40	4.16	115.27	114.27	114.46
L_AS-1	Circular	2366+52.45	AS-1	AS-0	109.71	108.95	1.00	0.00	2.50	505.00	0.15	11	16.25	2.27	115.58	115.27	115.68
L_B-1	Circular		B-1	B-3	110.50	110.08	1.00	0.00	3.00	427.21	0.10	19	16.02	5.84	117.62	116.98	118.15
L_B-10	Rectangular	2315+50.00	B-10	B-12	112.30	111.70	1.00	4.00	3.00	400.18	0.15	51	16.10	4.33	119.12	118.74	119.57
L_B-10-OF	Trapezoidal	2315+50.00	B-10	A-8A	119.07	116.70	1.00	50.00	0.50	15.00	15.80	17	16.12	1.47	119.12	119.13	119.57
L-B-11A	Trapezoidal		B-10A	B-11A	115.70	115.62	1.00	2.00	3.00	698.00	0.01	41	16.54	1.48	118.74	118.05	125.00
L_B-11	Rectangular	2324+00.00	B-11	B-13	107.58	107.38	1.00	5.00	4.00	199.62	0.10	77	16.26	6.36	115.08	114.93	117.00
L_B-11	Trapezoidal	2324+00.00	B-11	B-13	116.50	115.90	1.00	38.00	0.50	199.62	0.30	0	0.00	0.00	114.93	114.93	117.00
L-B-13A	Trapezoidal		B-11A	B-13A	115.62	114.70	1.00	2.00	3.00	301.00	0.31	50	16.40	2.08	118.05	117.61	125.00
L_B-12	Rectangular	2319+50.00	B-12	B-14	111.70	111.18	1.00	4.00	3.00	350.21	0.15	44	15.78	4.21	118.74	118.46	118.87
L_B-12-OF	Trapezoidal	2319+50.00	B-12	B-10A	118.37	115.70	1.00	50.00	0.50	15.00	17.80	35	15.98	3.10	118.74	118.74	118.87
L_B-13	Rectangular	2325+99.62	B-13	B-15	107.38	106.88	1.00	5.00	4.00	500.14	0.10	96	16.26	4.79	114.93	114.14	116.40
L-B-14A	Trapezoidal		B-13A	B-14A	114.70	114.34	1.00	2.00	3.00	301.00	0.12	49	16.54	1.65	117.61	117.32	125.00
L_B-14	Rectangular	2323+00.00	B-14	B-16	111.18	110.58	1.00	4.00	3.00	399.87	0.15	46	17.00	3.90	118.46	118.07	118.08
L-B-16A	Trapezoidal		B-14A	B-16A	114.34	113.93	1.00	2.00	3.00	520.00	0.08	50	16.51	1.62	117.32	116.80	125.00
L_B-15	Rectangular	2330+99.62	B-15	B-17	106.88	106.68	1.00	5.00	4.00	200.00	0.10	110	16.26	8.17	114.14	113.82	115.26
L_B-16	Rectangular	2327+00.00	B-16	B-18	110.58	110.13	1.00	4.00	3.00	300.01	0.15	57	15.93	4.69	118.07	117.67	118.53
L_B-16-OF	Trapezoidal	2327+00.00	B-16	B-11A	118.03	115.62	1.00	50.00	0.50	15.00	16.07	16	16.13	1.44	118.07	118.05	118.53
L-B-18A	Trapezoidal		B-16A	B-18A	113.93	113.12	1.00	2.00	3.00	653.00	0.12	53	16.64	2.24	116.80	115.04	125.00
L_B-17	Rectangular	2332+99.62	B-17	B-19	106.68	106.33	1.00	6.00	4.00	350.58	0.10	113	16.26	7.43	113.82	113.82	115.26
L_B-18	Rectangular	2330+00.00	B-18	B-20	110.13	109.63	1.00	4.00	3.00	330.00	0.15	61	15.94	5.08	117.67	117.07	118.23
L_B-18-OF	Trapezoidal	2330+00.00	B-18	B-13A	117.73	114.70	1.00	50.00	0.50	15.00	20.20	0	0.00	0.00	117.67	117.61	118.23
L-E13504	Trapezoidal		B-18A	E135-04	113.12	108.90	1.00	2.00	3.00	440.00	0.96	56	16.68	2.43	115.04	113.93	125.00
L_B-19	Rectangular	2336+50.00	B-19	B-21	106.33	106.18	1.00	6.00	4.00	149.62	0.10	115	16.26	7.95	113.82	113.82	115.09
L_B-19	Trapezoidal	2336+50.00	B-19	B-21	114.59	113.55	1.00	38.00	0.50	149.62	0.70	0	0.00	0.00	113.82	113.82	115.09
L_B-2-OF	Trapezoidal	2302+00.00	B-2	A-1A	122.17	118.66	1.00	50.00	0.50	15.00	23.40	0	0.00	0.00	120.87	119.49	122.67
L_B-2	Circular	2302+00.00	B-2	B-4	114.83	114.23	1.00	0.00	2.50	400.00	0.15	16	15.85	4.96	120.87	120.31	122.67
L_B-2	Trapezoidal	2302+00.00	B-2	B-4	121.67	120.27	1.00	38.00	0.50	400.00	0.35	0	0.00	0.00	120.87	120.31	122.67
L_B-20	Rectangular	2333+30.00	B-20	B-22	109.63	109.30	1.00	4.00	3.00	220.00	0.15	62	15.97	5.15	117.07	116.61	117.78
L_B-20-OF	Trapezoidal	2333+30.00	B-20	B-14A	117.28	114.34	1.00	50.00	0.50	15.00	19.60	-2	16.59	0.00	117.32	117.32	117.78
L_B-21	Rectangular	2337+99.62	B-21	B-23	106.18	105.58	1.00	8.00	5.00	600.12	0.10	142	16.25	3.95	113.82	113.82	114.05
L_B-22	Rectangular	2335+50.00	B-22	B-24	109.30	108.85	1.00	4.00	3.00	300.00	0.15	65	15.97	7.28	116.61	115.92	116.57
L_B-23	Rectangular	2343+99.62	B-23	B-25	105.58	105.28	1.00	8.00	5.00	299.33	0.10	160	16.25	4.68	113.82	113.82	112.90
L_B-24	Rectangular	2338+50.00	B-24	B-26	108.85	108.40	1.00	5.00	3.00	300.00	0.15	83	16.50	5.47	115.92	115.17	116.35
L_B-25	Rectangular	2346+98.97	B-25	MH-B1	105.28	105.00	1.00	8.00	5.00	276.78	0.10	173	16.25	7.47	113.82	113.82	113.27
L_B-26	Rectangular	2341+50.00	B-26	B-27	108.40	107.91	1.00	5.00	3.00	330.00	0.15	92	16.25	6.10	115.17	114.14	116.12
L_B-27	Rectangular	2344+80.00	B-27	B-28	107.91	107.47	1.00	5.00	3.00	290.00	0.15	102	16.25	6.76	114.14	113.92	115.49
L_B-28	Rectangular	2347+70.00	B-28	MH-B2	107.47	107.18	1.00	5.00	3.00	195.94	0.15	113	16.25	7.50	113.92	113.92	114.94
L_B-29	Rectangular	2352+45.87	B-29	MH-B1	105.85	105.58	1.00	4.00	4.00	270.06	0.10	63	16.25	6.46	113.82	113.82	113.43
L_B-3	Circular	2308+99.63	B-3	B-5	109.58	109.28	1.00	0.00	3.50	299.97	0.10	33	16.25	6.49	116.98	116.63	116.99
L_B-30	Circular	2351+56.35	B-30	MH-B2	106.47	106.18	1.00	0.00	3.50	190.41	0.15	56	16.25	5.77	113.92	113.92	114.87
L_B-31	Circular	2357+99.73	B-31	B-29	106.40	105.85	1.00	0.00	4.00	553.81	0.10	40	16.25	3.19	113.82	113.82	113.70
L_B-32	Circular	2356+30.00	B-32	B-30	107.68	106.97	1.00	0.00	3.00	473.65	0.15	39	16.22	5.42	114.27	113.92	116.22
L_B-33	Rectangular	2336+45.36	B-33	MH-B3	108.96	108.65	1.00	5.00	5.00	310.01	0.10	186	17.25	10.05	115.80	115.43	116.97
L_B-34	Rectangular	2341+51.05	B-34	MH-B3	109.60	109.40	1.00	5.00	4.00	197.72	0.10	133	16.53	8.11	115.48	115.43	117.27
L_B-4-OF	Trapezoidal	2306+00.00	B-4	A-5A	121.27	116.90	1.00	50.00	0.50	15.00	29.13	0	0.00	0.00	120.31	119.44	121.77
L_B-4	Circular	2306+00.00	B-4	B-6	113.73	113.35	1.00	0.00	3.00	250.00	0.15	27	16.26	3.82	120.31	119.90	121.77
L_B-4	Trapezoidal	2306+00.00	B-4	B-6	120.27	119.40	1.00	38.00	0.50	250.00	0.35	1	16.25	0.12	120.31	119.90	121.77
L_B-5	Circular	2311+99.62	B-5	B-7	108.78	108.38	1.00	0.00	4.00	400.00	0.10	47	16.25	7.07	116.63	116.33	116.62
L_B-6	Circular	2308+50.00	B-6	B-8	113.35	112.83	1.00	0.00	3.00	349.98	0.15	27	15.80	6.58	119.90	119.56	120.40
L_B-6-OF	Trapezoidal	2308+50.00	B-6	A-5A	119.90	116.90	1.00	50.00	0.50	15.00	20.00	35	16.19	3.08	119.90	119.44	120.40
L_B-7	Rectangular	2315+99.62	B-7	B-9	108.38	108.00	1.00	4.00	4.00	380.00	0.10	70	16.25	4.34	116.33	115.80	116.38

Table 8.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (100-Year) - Outfalls 5-6

Model: US290_Mit_SegD_SysA_Adj_SS.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_B-8	Rectangular	2312+00.00	B-8	B-10	112.83	112.30	1.00	3.00	3.00	349.90	0.15	33	15.80	6.51	119.56	119.12	120.12
L_B-8-OF	Trapezoidal	2312+00.00	B-8	A-8A	119.62	116.70	1.00	50.00	0.50	15.00	19.47	0	0.00	0.00	119.56	119.13	120.12
L_B-9	Rectangular	2319+79.62	B-9	B-11	108.00	107.58	1.00	4.00	4.00	420.55	0.10	73	16.25	4.55	115.80	115.08	116.40
L-E13504.1	Trapezoidal		D-2A	E135-04	113.05	108.59	1.00	2.00	3.00	160.00	2.79	4	16.28	0.95	113.93	113.93	125.00
L-D-2A	Trapezoidal		D-3A	D-2A	113.22	113.05	1.00	2.00	3.00	200.00	0.09	1	16.16	0.52	113.93	113.93	125.00
L-D-3A	Trapezoidal		D-4A	D-3A	113.70	113.22	1.00	2.00	3.00	145.00	0.33	1	16.04	0.64	114.02	113.93	125.00
E135.2	Natural		E135-03	MH-B1	104.48	104.14	1.00	0.00	0.00	61.00	0.56	1018	19.24	3.65	113.83	113.82	116.70
E135.4A	Natural		E135-04	MH-B2	105.50	105.42	1.00	0.00	0.00	20.00	0.40	1015	19.25	3.59	113.93	113.92	119.00
E135.4	Natural		E135-05	E135-04	105.79	105.50	1.00	0.00	0.00	74.00	0.39	1007	19.28	3.53	113.96	113.93	119.00
E135.6	Natural		E135-06	MH-B3	106.38	106.24	1.00	0.00	0.00	87.00	0.17	883	19.94	2.52	115.46	115.43	117.00
E135.7	Natural		E135-07	E135-06	106.72	106.38	1.00	0.00	0.00	198.00	0.17	914	17.89	3.34	115.53	115.46	117.00
E135.8	Natural		E135-08	E135-07	106.80	106.72	1.00	0.00	0.00	50.00	0.17	1021	17.25	3.82	115.55	115.53	117.00
E535.2	Circular		E535-02	E135-07	107.00	106.72	1.00	0.00	2.00	103.00	0.28	-17	16.10	4.52	115.53	115.53	117.00
E535.2	Circular		E535-02	E135-07	0.05	0.00	1.00	0.00	0.05	10.00	0.50	-217	17.40	0.00	###########	###########	117.00
E535.2	Circular		E535-02	E135-07	0.05	0.00	1.00	0.00	0.05	10.00	0.50	-217	17.40	0.00	###########	###########	117.00
E535.3	Circular		E535-03	E135-06	107.00	106.38	1.00	0.00	2.00	145.00	0.43	-17	16.08	4.01	115.46	115.46	117.00
E535.3	Circular		E535-03	E135-06	0.05	0.00	1.00	0.00	0.05	10.00	0.50	-692	16.87	0.00	###########	###########	117.00
E535.3	Circular		E535-03	E135-06	0.05	0.00	1.00	0.00	0.05	10.00	0.50	-692	16.87	0.00	###########	###########	117.00
E135.1	**Natural**	**2349+75.74**	**MH-B1**	**E135-01**	**104.14**	**103.73**	**1.00**	**0.00**	**0.00**	**87.60**	**0.47**	**1022**	**19.21**	**4.14**	**113.82**	**113.80**	**118.83**
E135.3	Natural	2349+65.94	MH-B2	E135-03	105.42	104.48	1.00	0.00	10.83	235.00	0.40	1018	19.24	3.59	**113.92**	113.83	117.61
E135.5	Rectangular	2339+52.81	MH-B3	E135-05	106.24	105.79	2.00	8.00	8.00	270.00	0.17	1007	19.28	7.86	115.43	113.96	117.19
Link985	Rectangular	2345+95.21	ML-01	B-34	110.04	109.60	1.00	4.00	4.00	444.22	0.10	109	17.03	6.83	115.80	115.48	117.27

Table 9.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (100-Year) - Outfalls 7-8

Model: E127MIT_100.XP & BW8MIT_100.XP **11/4/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfall 7																	
Link590	**Natural**		**6863.30**	**6325.00**	**98.45**	**97.83**	**1**	**0.00**	**0.00**	**538.30**	**0.12**	**1189.27**	**16.93**	**3.33**	**108.58**	**107.02**	**112.53**
Link588	Natural		7185.00	7185(ml)	98.45	98.45	1	0.00	0.00	70.00	0.00	975.15	17.63	1.94	108.68	108.66	112.53
Link655	Natural		7216.80	7185.00	99.44	98.45	1	0.00	0.00	31.80	3.11	950.41	17.00	5.65	108.72	108.68	112.53
Link587	Natural		7253.30	7216.80	99.47	99.44	1	0.00	0.00	36.50	0.08	950.33	17.00	5.76	108.87	108.72	112.56
Link665	Natural		7185(ml)	6863.30	98.45	98.45	1	0.00	0.00	251.70	0.00	1016.90	17.24	1.99	108.66	108.58	112.53
L_AN4	Rectangular	2370+99.66	AN-1	AN-2	103.88	103.18	1	4.00	4.00	696.00	0.10	42.86	16.25	2.68	113.09	111.99	113.00
L_AN5	Rectangular	2377+99.72	AN-2	AN-J3	103.18	102.93	1	6.00	4.00	250.28	0.10	85.39	16.26	3.54	111.99	111.83	111.94
L_AN7	Rectangular	2382+99.82	AN-3	AN-J4	102.68	102.38	1	7.00	4.00	300.16	0.10	128.82	16.26	4.57	111.61	111.20	111.64
L_AN9	Rectangular	2388+99.84	AN-4	AN-5	102.08	101.68	1	7.00	4.00	399.57	0.10	164.51	16.26	5.84	110.85	110.39	111.04
L_AN10	Rectangular	2392+99.41	AN-5	AN-J5	101.68	101.43	1	6.00	5.00	250.60	0.10	181.42	16.26	6.03	110.39	110.04	110.36
L_AN12	Rectangular	2398+00.00	AN-6	AN-J6	101.18	100.83	1	8.00	5.00	350.00	0.10	201.21	16.26	5.02	109.45	109.00	109.38
L_AN15	Rectangular	2406+60.52	AN-7	6863.30	100.32	100.00	1	8.00	5.00	318.92	0.10	235.16	16.26	5.86	108.72	108.58	108.55
L_AN6	Rectangular	2380+50.00	AN-J3	AN-3	102.93	102.68	1	6.00	4.00	249.82	0.10	85.47	16.26	3.54	111.83	111.61	112.39
L_AN8	Rectangular	2386+00.00	AN-J4	AN-4	102.38	102.08	1	7.00	4.00	299.84	0.10	128.93	16.26	4.58	111.20	110.85	111.94
L_AN11	Rectangular	2395+62.68	AN-J5	AN-6	101.43	101.18	1	6.00	5.00	251.30	0.10	181.45	16.26	6.03	110.04	109.45	110.36
L_AN13	Rectangular	2401+50.00	AN-J6	AN-J7	100.83	100.55	1	8.00	5.00	274.89	0.10	201.22	16.26	5.02	109.00	108.81	109.96
L_AN14	Rectangular	2404+25.00	AN-J7	AN-7	100.55	100.32	1	8.00	5.00	235.39	0.10	201.22	16.26	5.02	108.81	108.72	109.18
L-RD-1	Trapezoidal		A-R1	RD-2	105.44	104.30	1	2.00	4.00	1144.00	0.10	13.07	17.82	1.14	108.82	108.81	109.50
L_AS5	Rectangular	2371+00.00	AS-2	AS-J3	103.81	103.41	1	4.00	4.00	400.00	0.10	19.86	15.93	1.43	110.78	110.74	114.63
L_AS7	Rectangular	2379+00.00	AS-3	AS-J4	103.01	102.66	1	4.00	4.00	350.00	0.10	42.73	15.93	2.67	110.69	110.51	113.53
L_AS9	Rectangular	2386+00.00	AS-4	AS-J5	102.31	102.01	1	5.00	4.00	305.00	0.10	64.26	16.25	3.20	110.33	110.12	112.73
L_AS11	Rectangular	2392+10.00	AS-5	AS-J6	101.70	101.48	1	5.00	4.00	220.00	0.10	83.36	16.25	4.15	109.91	109.66	111.97
L_AS13	Rectangular	2396+50.00	AS-6	AS-J7	101.26	100.94	1	6.00	4.00	325.00	0.10	98.18	16.25	4.07	109.41	109.09	111.65
L_AS15	Rectangular	2403+00.00	AS-7	AS-8	100.61	100.23	1	6.00	4.00	380.00	0.10	119.01	16.25	4.93	108.84	108.73	110.00
L_AS16	Rectangular	2406+80.00	AS-8	7185(ml)	100.23	100.00	1	6.00	4.00	230.51	0.10	132.12	16.25	5.48	108.73	108.66	110.00
L_AS6	Rectangular	2375+00.00	AS-J3	AS-3	103.41	103.01	1	4.00	4.00	400.00	0.10	21.62	15.93	1.35	110.74	110.69	115.13
L_AS8	Rectangular	2382+50.00	AS-J4	AS-4	102.66	102.31	1	4.00	4.00	350.00	0.10	43.36	15.93	2.70	110.51	110.33	113.78
L_AS10	Rectangular	2389+05.00	AS-J5	AS-5	102.01	101.70	1	5.00	4.00	305.00	0.10	64.30	16.26	3.20	110.12	109.91	113.01
L_AS12	Rectangular	2394+30.00	AS-J6	AS-6	101.48	101.26	1	5.00	4.00	220.00	0.10	83.38	16.26	4.15	109.66	109.41	112.75
L_AS14	Rectangular	2399+75.00	AS-J7	AS-7	100.94	100.61	1	6.00	4.00	325.00	0.10	98.20	16.25	4.07	109.09	108.84	111.62
L_BN14	Rectangular	2413+41.07	BN-1	6863.30	99.36	99.00	1	4.00	4.00	361.52	0.10	76.62	16.47	4.76	109.13	108.58	107.82
L_BN2	Rectangular	2419+50.35	BN-2	BN-J1	99.97	99.64	1	8.00	4.00	335.35	0.10	56.73	16.65	1.76	109.22	109.17	107.52
L_BN4	Rectangular	2424+00.34	BN-3	BN-J2	100.42	100.20	1	7.00	4.00	225.33	0.10	29.81	16.60	1.06	109.24	109.23	106.17
L_BN1	Rectangular	2416+15.00	BN-J1	BN-1	99.64	99.36	1	8.00	4.00	273.86	0.10	54.51	16.74	1.69	109.17	109.13	108.52
L_BN3	Rectangular	2421+75.00	BN-J2	BN-2	100.20	99.97	1	7.00	4.00	224.65	0.10	28.37	17.80	1.01	109.23	109.22	107.51
Link653	Circular		BR-1	RD-9	103.38	102.29	1	0.00	2.00	1087.00	0.10	7.35	16.04	2.31	110.32	109.58	109.50
L_BS11	Circular	2412+00.00	BS-1	7185(ml)	100.29	100.00	1	0.00	4.00	289.49	0.10	52.33	16.06	4.14	108.74	108.66	109.19
L_BS2	Circular	2417+50.00	BS-2	BS-J1	100.84	100.56	1	0.00	3.50	275.00	0.10	36.04	16.06	3.72	108.92	108.81	108.90
L_BS4	Circular	2423+00.00	BS-3	BS-J2	101.39	101.11	1	0.00	3.00	275.00	0.10	18.54	16.06	2.60	109.14	109.02	108.45
L_BS1	Circular	2414+75.00	BS-J1	BS-1	100.56	100.29	1	0.00	3.50	275.00	0.10	36.02	16.06	3.72	108.81	108.74	109.45
L_BS3	Circular	2420+25.00	BS-J2	BS-2	101.11	100.84	1	0.00	3.00	275.00	0.10	18.52	16.06	2.60	109.02	108.92	109.27
L-RD-2	Trapezoidal		RD-2	RD-3	104.30	103.79	1	2.00	4.00	508.00	0.10	18.66	17.99	1.10	108.81	108.80	109.50
L-RD-3	Circular		RD-3	RD-4	103.79	103.73	1	0.00	2.50	60.00	0.10	20.51	18.08	4.16	108.80	108.77	109.50
L-RD-4	Trapezoidal		RD-4	RD-5	103.73	103.12	1	2.00	4.00	613.00	0.10	-23.03	16.41	1.11	108.77	108.76	109.50
L-RD-5	Trapezoidal		RD-5	RD-6	103.12	101.89	1	2.00	4.00	1225.00	0.10	-45.92	16.37	0.78	108.76	108.73	109.50
L-RD-6	Trapezoidal		RD-6	RD-7	101.89	100.84	1	2.00	4.00	1054.00	0.10	-77.74	16.23	0.77	108.73	108.69	109.50
L-RD-7	Trapezoidal		RD-7	7185.00	100.84	100.33	1	2.00	4.00	510.00	0.10	-104.08	16.09	0.95	108.69	108.68	109.50
Link649	Circular		RD-8	7185.00	100.94	100.30	1	0.00	4.00	636.00	0.10	7.27	16.05	0.68	108.75	108.68	109.50
Link652	Circular		RD-9	RD-8	102.29	100.94	1	0.00	2.00	1352.00	0.10	7.31	16.05	2.30	109.58	108.75	109.50
Outfall 8																	
L_BN5	Circular	2428+00.33	BN-4	BN-J3	95.56	95.31	1	0.00	3.00	249.67	0.10	-16.46	16.39	2.63	102.92	102.92	106.17
L_BN7	Circular	2433+00.33	BN-5	BN-J4	95.06	94.66	1	0.00	4.00	399.64	0.10	-31.71	16.36	2.57	102.92	102.92	106.47
L_BN9	Rectangular	2441+00.32	BN-6	BN-J5	94.26	93.96	1	5.00	4.00	299.68	0.10	38.45	17.07	1.91	102.92	102.92	106.22
L_BN11	Rectangular	2447+00.32	BN-7	BN-J6	93.66	93.26	1	8.00	5.00	399.68	0.10	220.87	28.49	6.11	102.92	102.92	106.22
L_BN13	Rectangular	2455+00.00	BN-8	CN-1	92.86	92.54	1	8.00	5.00	323.44	0.10	222.40	28.50	6.20	102.91	102.91	105.56
L_BN6	Circular	2430+50.00	BN-J3	BN-5	95.31	95.06	1	0.00	3.00	250.33	0.10	-16.81	16.29	2.24	102.92	102.92	106.91
L_BN8	Circular	2437+00.00	BN-J4	BN-6	94.66	94.26	1	0.00	4.00	400.32	0.10	-32.31	16.32	1.74	102.92	102.92	107.61
L_BN10	Rectangular	2444+00.00	BN-J5	BN-7	93.96	93.66	1	5.00	4.00	300.32	0.10	38.45	17.07	1.91	102.92	102.92	107.41
L_BN12	Rectangular	2451+00.00	BN-J6	BN-8	93.26	92.86	1	8.00	5.00	400.00	0.10	221.76	28.50	6.18	102.92	102.91	107.61

Table 9.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (100-Year) - Outfalls 7-8

Model: E127MIT_100.XP & BW8MIT_100.XP **11/4/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Link615	Rectangular		B-R2	BS-J4	94.25	94.21	1	8.00	5.00	40.30	0.00	-230.11	16.95	4.53	102.92	102.92	108.97
L_BS5	Circular	2428+00.00	BS-4	BS-J3	95.73	95.48	1	0.00	3.00	250.00	0.10	21.59	16.22	3.22	102.93	102.93	108.15
L_BS7	Circular	2433+00.00	BS-5	BS-6	95.23	94.83	1	0.00	3.50	400.00	0.10	35.58	16.23	4.75	102.93	102.93	108.45
L_BS8	Circular	2437+00.00	BS-6	BS-7	94.83	94.43	1	0.00	4.00	399.93	0.10	26.72	16.05	3.70	102.93	102.93	108.45
L_BS9	Circular	2441+00.00	BS-7	BS-J4	94.43	94.21	1	0.00	4.00	224.99	0.10	-29.67	16.22	2.21	102.93	102.92	108.45
L_BS12	Rectangular	2445+50.00	BS-8	BN-7	93.98	93.66	1	8.00	5.00	319.53	0.10	-188.35	16.90	5.24	102.92	102.92	108.30
L_BS6	Circular	2430+50.00	BS-J3	BS-5	95.48	95.23	1	0.00	3.00	250.00	0.10	21.74	16.22	3.11	102.93	102.93	108.90
L_BS10	Rectangular	2443+25.00	BS-J4	BS-8	94.21	93.98	1	8.00	5.00	225.00	0.10	-205.21	16.92	5.07	102.92	102.92	108.97
Link618	Circular	211+57.61	BW8DET	CN-J13	87.75	87.61	1	0.00	4.00	130.00	0.00	163.97	16.34	12.89	102.89	102.88	102.50
L_OS4	Circular	2504+92.58	BW8-SE	CS-8	89.41	89.13	1	0.00	6.00	271.60	0.10	109.37	25.66	3.84	102.89	102.89	102.08
L_OS3	Rectangular	2499+06.76	BW8-SW	POND-6A	91.20	91.00	1	6.00	3.00	125.00	0.10	191.55	25.94	10.50	103.32	102.90	102.66
L_CN1	Rectangular	2458+23.49	CN-1	CN-J1	92.54	92.10	1	8.00	5.00	438.38	0.10	227.71	28.42	6.33	102.91	102.91	103.00
L_CN3	Rectangular	2467+00.30	CN-2	CN-J2	91.66	91.26	1	9.00	5.00	399.70	0.10	236.83	28.37	5.95	102.90	103.56	104.67
L_CN6	Rectangular	2477+80.30	CN-3	CN-4	90.58	90.26	1	9.00	6.00	320.22	0.10	241.06	28.36	5.95	102.90	102.90	101.82
L_CN7	Rectangular	2481+00.00	CN-4	CN-J4	90.26	89.86	1	9.00	6.00	400.00	0.10	242.62	28.23	5.94	102.90	102.89	101.42
L_CN10	Rectangular	2493+00.00	CN-5	CN-J6	89.06	88.71	1	9.00	6.00	349.96	0.10	320.31	16.69	5.90	102.89	102.89	101.47
L_CN12	Rectangular	2499+00.00	CN-6	CN-J7	88.46	88.16	1	10.00	6.00	299.99	0.10	376.63	16.33	6.26	102.89	102.89	101.32
L_CN14	Rectangular	2505+00.00	CN-7	CN-J8	87.86	87.73	2	7.00	6.00	137.61	0.10	563.65	28.18	7.78	102.89	102.89	100.87
L_CN22	Circular	2514+00.00	CN-8	CN-J15	90.00	89.70	1	0.00	4.50	245.69	0.10	32.61	16.25	2.03	102.89	102.89	100.27
L_CN2	Rectangular	2462+62.00	CN-J1	CN-2	92.10	91.66	1	8.00	5.00	438.18	0.10	228.71	28.41	6.48	102.91	102.90	104.34
L_CN17	Rectangular	2507+95.01	CN-J10	CN-J11	87.43	87.24	2	7.00	6.00	184.54	0.10	570.09	28.19	9.64	102.88	102.88	102.34
L_CN23	**Rectangular**	**2509+23.24**	**CN-J11**	**E135-01**	**87.24**	**87.19**	**2**	**8.00**	**8.00**	**60.06**	**0.10**	**620.99**	**28.16**	**9.93**	**102.88**	**102.88**	**101.94**
L_CN18	Rectangular	2510+49.51	CN-J12	CN-J11	87.41	87.24	1	9.00	6.00	165.16	0.10	195.69	16.33	3.61	102.88	102.88	101.49
L_CN19	Rectangular	2511+02.56	CN-J13	CN-J12	87.61	87.41	1	9.00	6.00	200.04	0.10	195.72	16.33	3.61	102.88	102.88	101.31
Link617	Rectangular	2511+54.31	CN-J15	BW8DET	88.20	88.00	1	6.00	6.00	130.00	0.00	257.18	16.18	7.12	102.89	102.89	101.13
L_CN4	Rectangular	2471+00.00	CN-J2	CN-J3	91.26	90.86	1	9.00	5.00	400.00	0.10	238.46	28.36	5.93	103.56	102.90	105.22
L_CN5	Rectangular	2475+00.00	CN-J3	CN-3	90.86	90.58	1	9.00	5.00	280.29	0.10	239.38	28.36	5.92	102.90	102.90	103.22
L_CN8	Rectangular	2485+00.00	CN-J4	CN-J5	89.86	89.46	1	9.00	6.00	399.93	0.10	244.77	28.20	5.92	102.89	102.89	103.42
L_CN9	Rectangular	2489+00.00	CN-J5	CN-5	89.46	89.06	1	9.00	6.00	400.00	0.10	247.69	28.19	5.90	102.89	102.89	102.87
L_CN11	Rectangular	2496+50.00	CN-J6	CN-6	88.71	88.46	1	9.00	6.00	249.97	0.10	320.32	16.69	5.90	102.89	102.89	102.32
L_CN13	Rectangular	2502+00.00	CN-J7	CN-7	88.16	87.86	2	7.00	6.00	300.00	0.10	549.00	28.19	7.28	102.89	102.89	102.37
L_CN15	Rectangular	2506+02.80	CN-J8	CN-J9	87.73	87.58	2	7.00	6.00	150.00	0.10	565.29	28.19	8.14	102.89	102.88	101.38
L_CN16	Rectangular	2506+95.66	CN-J9	CN-J10	87.58	87.43	2	7.00	6.00	150.00	0.10	567.28	28.19	8.68	102.88	102.88	101.85
L_CS1	Circular	2463+00.00	CS-1	CS-J1	95.44	95.19	1	0.00	3.00	249.96	0.10	31.22	16.26	4.37	106.05	105.81	105.83
L_CS3	Circular	2468+00.00	CS-2	CS-3	93.94	93.64	1	0.00	4.00	299.95	0.10	55.85	16.26	4.41	105.62	105.44	105.56
L_CS4	Circular	2471+00.00	CS-3	CS-J2	93.64	93.29	1	0.00	4.00	349.98	0.10	78.07	16.26	6.17	105.44	104.85	106.61
L_CS6	Rectangular	2478+00.00	CS-4	CN-3	92.94	92.58	1	6.00	4.00	361.73	0.10	250.23	16.70	10.35	104.10	102.90	103.46
L_CS7	Circular	2481+00.00	CS-5	CS-J3	93.85	93.45	1	0.00	3.00	399.99	0.10	28.55	16.25	4.02	102.90	102.90	103.16
L_CS10	Circular	2491+00.00	CS-6	CS-J5	91.85	91.45	1	0.00	4.00	400.00	0.10	85.85	16.26	6.77	102.90	102.90	101.76
L_CS13	Rectangular	2500+00.00	CS-7	CN-J7	90.69	90.16	1	8.00	4.00	524.02	0.10	-321.28	16.52	8.98	102.90	102.89	100.71
L_CS14	Circular	2507+00.00	CS-8	CS-J7	89.13	88.73	1	0.00	6.00	399.95	0.10	147.85	16.20	5.20	102.89	102.89	100.81
L_CS15	Circular	2514+00.00	CS-9	CS-J7	91.53	91.23	1	0.00	3.50	299.94	0.10	53.44	16.00	5.51	102.89	102.89	100.46
L_CS2	Circular	2465+50.00	CS-J1	CS-2	94.69	94.44	1	0.00	3.50	250.00	0.10	31.29	16.26	3.22	105.81	105.62	106.81
L_CS5	Circular	2474+50.00	CS-J2	CS-4	93.29	92.94	1	0.00	4.00	349.89	0.10	78.12	16.26	6.18	104.85	104.10	105.03
L_CS8	Circular	2485+00.00	CS-J3	CS-J4	93.45	93.15	1	0.00	3.00	299.92	0.10	28.58	16.26	4.03	102.90	102.90	103.86
L_CS9	Circular	2488+00.00	CS-J4	CS-6	93.15	92.85	1	0.00	3.00	300.00	0.10	28.62	16.26	4.04	102.90	102.90	102.81
L_CS11	Circular	2495+00.00	CS-J5	CS-J6	91.45	91.15	1	0.00	4.00	300.00	0.10	85.37	16.26	7.17	102.90	102.90	102.46
Link616	Circular	2498+00.00	CS-J6	POND-6A	91.15	91.00	1	0.00	4.00	70.00	0.00	84.79	16.26	9.45	102.90	102.90	101.41
L_CS16	Circular	2511+00.00	CS-J7	CN-J15	88.73	88.20	1	0.00	6.00	535.43	0.10	194.11	16.13	6.83	102.89	102.89	101.51
BS-ML	Circular		ML-03	ML-04	95.21	94.39	1	0.00	5.00	819.64	0.00	75.93	16.52	5.25	102.93	102.93	109.04
L_BS14	Rectangular	2441+61.51	ML-04	B-R2	94.39	94.25	1	8.00	5.00	132.33	0.10	-235.23	16.95	4.46	102.93	102.92	108.97
L_OS2	Circular	2478+70.48	ML-05	CS-4	93.45	92.94	1	0.00	3.50	508.23	0.10	42.29	16.70	4.35	106.34	104.10	106.46
L_CS12	Rectangular		POND-6A	CS-7	91.00	90.69	1	8.00	4.00	120.00	0.10	-373.91	16.50	8.51	102.90	102.90	102.50
L_BS13	Rectangular	2445+42.58	POND-7B	ML-04	94.60	94.39	1	8.00	5.00	200.00	0.10	-349.39	16.88	4.49	102.93	102.93	108.30
L_OS1	Circular	2480+89.48	SNT01	CS-4	93.24	92.94	1	0.00	4.00	297.79	0.10	111.93	16.65	0.00	##########	##########	104.71
L_OS1	Circular	2480+89.48	SNT01	CS-4	93.24	92.94	1	0.00	4.00	297.79	0.10	111.93	16.65	0.00	##########	##########	104.71

Table 9.0-A

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (100-Year) - Outfalls 8A and 8B **Model:BW8South_Mit_100-R3.xp** **2/27/2012**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfall 8A-8B																
L-POND6F	Rectangular	BW-J3	L-21	95.69	95.41	1	6.00	4.00	56.65	0.49	186	17.10	7.72	102.41	102.21	103.18
L_L-C7	Rectangular	CI-C7	BW-J3	99.00	98.66	1	4.00	2.00	74.18	0.50	16	16.00	4.71	102.42	102.41	103.40
L_L-SD2	Rectangular	SD-1A	SD-2	100.00	98.97	1	7.00	3.00	208.00	1.00	90	16.13	5.72	104.09	103.86	106.30
L_L-SD2	Trapezoidal	SD-1A	SD-2	100.00	97.51	1	0.00	6.30	206.38	1.21	89	16.04	3.20	103.79	103.79	106.30
L_L-SD1	Natural	SD-1	SD-1A	100.42	100.00	1	4.00	0.00	379.57	0.11	89	16.15	2.42	103.84	103.79	105.12
L_L-A12	Rectangular	CI-A12	SD-1	100.53	100.42	1	4.00	2.00	89.19	0.14	28	16.25	3.50	103.87	103.84	105.11
L_L-B12	Rectangular	CI-B12	SD-1	100.51	100.42	1	4.00	2.00	88.58	0.10	65	16.26	8.08	104.38	103.84	104.88
L_L-A10	Rectangular	DI-A10	CI-A12	100.84	100.53	1	4.00	2.00	312.29	0.10	13	16.01	1.65	103.90	103.87	104.00
L_L-OFFB12	Rectangular	OFF-B12	CI-B12	100.53	100.51	1	4.00	2.00	24.70	0.08	59	16.26	7.33	104.52	104.38	104.88
L_L-B10	Rectangular	DI-B10	CI-B12	100.70	100.52	1	4.00	2.00	305.74	0.06	5	17.01	1.04	104.39	104.38	104.00
Link57	Circular	BW-C4	POND6F	97.99	97.80	1	0.00	2.00	38.00	0.50	6	16.00	2.68	103.35	103.34	103.30
Link65	Rectangular	BW-C3	BW-J1	97.43	97.30	1	4.00	3.00	127.00	0.16	61	16.25	5.07	103.76	103.63	103.82
Link56	Circular	BW-C5	POND6H	97.99	97.68	1	0.00	2.00	96.00	0.32	3	16.25	1.95	103.32	103.32	104.12
L-B1	Rectangular	B-1	SD-3	98.53	98.50	1	3.00	2.00	25.00	0.12	23	16.25	4.75	103.70	103.69	102.90
L_L-C2	Rectangular	BW-C1	BW-C3	97.66	97.43	1	3.00	3.00	231.00	0.17	44	16.26	4.90	104.14	103.76	105.04
L_L-D4	Rectangular	BW-D4	POND6H	98.49	97.26	1	3.00	2.00	110.00	1.12	32	16.13	5.26	103.43	103.32	102.12
L-POND	Rectangular	BW-D3	POND6H	97.26	97.16	1	4.00	3.00	97.00	0.09	70	16.25	5.80	103.46	103.32	102.86
L_L-D2	Rectangular	BW-D1	BW-D3	98.40	97.26	1	3.00	3.00	396.00	0.11	45	16.26	5.01	104.07	103.46	104.41
L_L-B9	Circular	A-1	CI-B9	99.88	99.41	1	4.00	2.00	67.00	0.70	3	16.01	2.82	103.36	103.35	104.19
L-SD2	Rectangular	SD-2	SD-3	97.51	97.36	1	7.00	3.00	140.00	0.11	82	16.05	3.91	103.79	103.69	106.00
Link55	Rectangular	BW-J1	POND6H	97.30	97.15	1	7.00	3.00	151.00	0.10	161	16.05	7.63	103.63	103.32	103.31
L-CIB9	Rectangular	CI-B9	POND6F	99.41	99.09	1	4.00	2.00	182.00	0.18	10	16.14	2.94	103.35	103.34	102.47
Link48	Circular	B-1A	B-1	98.68	98.53	1	3.00	2.00	16.00	0.94	10	16.25	4.36	103.71	103.70	102.90
Link58	Rectangular	POND6H	BW-J3	96.39	96.24	1	6.00	4.00	149.22	0.00	179	17.25	7.45	103.32	102.41	103.50
L_L-G3	Circular	CI-G3	DI-L25	96.55	96.46	1	0.00	1.50	46.65	0.19	7	16.01	4.73	97.74	97.45	101.92
L_L-L24	Rectangular	DI-L24	DI-L25	94.58	93.31	1	6.00	4.00	749.30	0.17	195	16.81	8.13	100.29	97.31	103.00
L_L-L24	Trapezoidal	DI-L24	DI-L25	102.21	101.80	1	0.00	0.50	749.30	0.00	0	0.00	0.00	97.31	97.31	103.00
L_L-F2	Circular	CI-F2	DI-L24	97.17	97.08	1	0.00	1.50	46.59	0.19	9	15.99	5.09	100.33	100.29	102.69
L_L-L23	Rectangular	MH-L23	DI-L24	95.12	94.58	1	6.00	4.00	326.54	0.16	188	17.02	7.81	101.47	100.29	104.73
L_L-E5	Circular	CI-E5	MH-L23	97.90	97.62	1	0.00	1.50	93.07	0.29	5	16.01	3.82	101.49	101.47	103.80
L_L-L22	Rectangular	MH-L22	MH-L23	95.92	95.12	1	6.00	4.00	105.86	0.14	187	17.06	7.77	101.85	101.47	104.81
L_L-D9	Circular	CI-D9	MH-L22	97.00	96.77	1	0.00	2.50	93.23	0.24	4	16.00	2.59	101.85	101.85	103.53
L_L-A7	Rectangular	CI-A7	DI-R13	96.31	96.22	1	3.00	2.00	62.78	0.14	6	16.01	2.13	97.55	97.53	101.23
L_L-R12	Rectangular	DI-R12	DI-R13	97.27	96.22	1	5.00	2.00	707.92	0.15	27	16.26	4.02	98.60	97.53	102.60
L_L-R12	Trapezoidal	DI-R12	DI-R13	102.10	101.13	1	0.00	0.50	707.92	0.00	0	0.00	0.00	97.53	97.53	102.60
L_L-R11	Rectangular	CI-R11	DI-R12	97.34	97.27	1	3.00	2.00	59.15	0.12	13	16.26	3.31	98.68	98.60	101.93
L_L-L21	Rectangular	L-21	MH-L22	95.41	95.27	1	6.00	4.00	101.78	0.14	186	17.10	7.72	102.21	101.85	104.00
L_L-B1	Rectangular	SD-3	BW-J1	97.36	97.30	1	7.00	3.00	57.00	0.11	104	16.05	4.96	103.69	103.63	103.15
L-BWD6	Circular	BW-D6	CI-R11	97.80	97.58	1	3.00	2.00	215.30	0.00	7	16.26	3.43	99.16	98.68	102.53
L-A2	Circular	A-2	POND6F	97.99	97.81	1	0.00	2.00	36.00	0.50	12	17.95	3.76	103.34	103.34	102.34
L-POND6H	Rectangular	POND6F	POND6H	97.60	97.49	1	4.00	3.00	108.61	0.10	31	17.97	2.57	103.34	103.32	103.50

Table 10.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (100-Year) - Outfalls 9-16

7/12/2011

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 9-10																	
L_L-A-12	Rectangular	2534+93.36	A-12	A-13	88.00	87.59	1.00	7.00	4.00	205.56	0.20	144	17.95	5.10	96.20	95.90	95.64
L_L-A-13	Rectangular	2536+98.92	A-13	A-14	87.59	87.39	1.00	7.00	4.00	100.62	0.20	147	17.92	5.22	95.90	95.75	94.82
L_L-A-14	Rectangular	2538+43.05	A-14	A-15	87.39	87.09	1.00	7.00	4.00	150.06	0.20	148	17.91	5.27	95.75	95.52	94.42
L_L-A-15	Rectangular	2540+73.46	A-15	A-17	87.09	86.44	1.00	7.00	4.00	324.37	0.20	149	17.88	5.30	95.52	95.03	94.94
L_L-A-17	Rectangular	2542+14.55	A-17	A-18	85.44	85.09	1.00	7.00	5.00	176.84	0.20	167	17.65	4.74	95.03	94.84	94.86
Link766	Rectangular		A-17OFF	A-17	86.47	86.44	1.00	4.00	4.00	15.00	0.20	110	19.67	6.87	95.06	95.03	94.86
L_L-A-18	Rectangular	2543+91.39	A-18	A-19	85.09	84.70	1.00	7.00	5.00	192.55	0.20	168	17.65	4.77	94.84	94.66	94.24
L_L-A-19	Rectangular	2545+97.39	A-19	A-20	84.70	84.44	1.00	7.00	5.00	129.54	0.20	169	16.18	4.82	94.66	94.53	93.56
L_L-A-2	Circular	2520+44.58	A-2	A-3	95.80	95.60	1.00	0.00	2.00	98.60	0.20	12	16.25	4.60	98.47	98.39	101.43
L_L-A-20	Rectangular	2547+13.48	A-20	A-21	84.44	84.20	1.00	8.00	5.00	120.46	0.20	171	16.10	4.26	94.53	94.45	93.16
L_L-A-21	Rectangular	2548+33.94	A-21	A-22	84.20	83.89	1.00	8.00	5.00	156.16	0.20	176	16.10	4.37	94.45	94.35	93.16
L_L-A-22	Rectangular	2549+90.10	A-22	A-23	83.89	83.70	1.00	9.00	5.00	92.91	0.20	174	17.68	3.85	94.35	94.30	93.16
L_L-A-23	Rectangular	2550+54.39	A-23	A-24	83.70	83.48	1.00	9.00	5.00	109.98	0.20	186	17.70	4.10	94.30	94.24	93.16
L-A-23B	Circular		A-23B	A-23	85.75	85.70	1.00	0.00	3.00	15.00	0.31	17	26.81	5.57	94.30	94.30	92.47
L-A-23OFF	Circular	2550+54.39	A-23OFF	A-23B	89.42	88.94	1.00	0.00	1.50	240.00	0.20	17	26.81	9.62	97.30	94.30	94.00
L_L-A-24	Rectangular	2551+92.77	A-24	A-OUT2	83.48	83.30	1.00	9.00	5.00	92.12	0.20	188	17.72	4.15	94.24	94.15	92.85
L-A-24OFF	Circular		A-24OFF	A-24	90.10	89.54	1.00	0.00	1.50	280.00	0.20	6	15.93	3.32	94.28	94.24	93.50
L_L-A-25	Circular	2519+97.19	A-25	A-26	91.78	91.35	1.00	0.00	3.50	175.50	0.25	56	16.50	5.80	97.52	96.98	99.10
L_L-A-26	Circular	2521+72.68	A-26	A-27	91.35	91.03	1.00	0.00	3.50	124.22	0.25	64	16.50	6.62	96.98	96.48	98.23
L_L-A-27	Circular	2522+96.91	A-27	A-28	90.53	90.28	1.00	0.00	4.00	100.64	0.25	80	16.50	6.32	96.48	96.17	97.61
L-A-27OFF	Circular	2522+96.37	A-27OFF	A-27	92.57	92.53	1.00	0.00	2.00	15.01	0.25	7	16.26	4.12	96.49	96.48	97.61
L_L-A-28	Circular	2523+97.55	A-28	A-29	90.28	89.91	1.00	0.00	4.00	150.67	0.25	86	16.26	6.85	96.17	95.64	97.96
L_L-A-29	Circular	2526+00.00	A-29	A-30	89.91	89.31	1.00	0.00	4.00	238.42	0.25	93	16.26	7.36	95.64	94.73	98.48
L_L-A-3	Circular	2521+43.25	A-3	A-4	95.10	94.70	1.00	0.00	2.50	199.17	0.20	16	16.26	4.51	98.39	98.33	101.04
L_L-A-30	Rectangular	2527+86.64	A-30	A-31	89.31	88.84	1.00	5.00	4.00	186.43	0.25	-56	17.12	4.83	94.73	94.75	98.56
L_L-A-31	Rectangular	2529+73.07	A-31	A-32	88.84	88.54	1.00	5.00	4.00	122.24	0.25	-54	17.23	4.68	94.75	94.77	97.62
L_L-A-32	Rectangular	2530+95.31	A-32	A-34	88.54	88.03	1.00	5.00	4.00	201.60	0.25	-52	17.24	4.53	94.77	94.78	97.01
L_L-A-34	Rectangular	2532+96.91	A-34	A-35	88.03	87.66	1.00	5.00	4.00	150.28	0.25	62	26.35	5.39	94.78	94.78	96.01
L_L-A-35	Rectangular	2535+00.00	A-35	A-36	86.66	85.91	1.00	5.00	5.00	299.38	0.25	64	16.58	4.13	94.78	94.68	96.53
L-A-35OFF	Circular	2534+01.25	A-35OFF	A-35	88.78	88.66	1.00	0.00	3.00	48.32	0.25	58	16.47	8.19	95.12	94.78	94.00
L_L-A-36	Rectangular	2537+47.12	A-36	A-37	85.91	85.53	1.00	5.00	5.00	150.75	0.25	68	16.51	4.00	94.68	94.62	96.53
L_L-A-37	Rectangular	2538+97.86	A-37	A-38	85.53	85.16	1.00	5.00	5.00	149.75	0.25	72	16.51	3.87	94.62	94.55	96.00
L_L-A-38	Rectangular	2540+34.17	A-38	A-39	85.16	84.72	1.00	5.00	5.00	174.51	0.25	80	16.51	3.69	94.55	94.46	95.48
L_L-A-39	Rectangular	2542+00.00	A-39	A-40	84.72	84.35	1.00	5.00	5.00	150.01	0.25	86	16.26	3.53	94.46	94.37	94.87
L_L-A-4	Circular	2523+25.00	A-4	A-5	92.92	92.57	1.00	0.00	3.00	174.36	0.20	24	16.26	4.09	98.33	98.30	100.24
L_L-A-40	Rectangular	2543+58.68	A-40	A-41	84.35	83.97	1.00	5.00	5.00	149.99	0.25	92	16.26	3.65	94.37	94.28	94.34
L_L-A-41	Rectangular	2545+08.68	A-41	A-42	83.97	83.66	1.00	5.00	5.00	125.00	0.25	97	16.26	3.87	94.28	94.20	93.82
L_L-A-42	Rectangular	2546+50.00	A-42	A-43	83.66	83.28	1.00	5.00	5.00	152.41	0.25	97	16.18	3.86	94.20	94.19	93.38
L_L-A-43	Rectangular	2547+86.09	A-43	A-OUT1	83.28	83.00	1.00	5.00	5.00	111.15	0.25	105	16.15	4.20	94.19	94.19	93.16
L_L-A-44	Circular	2516+00.00	A-44	A-25	92.66	92.28	1.00	0.00	3.00	150.17	0.25	49	16.50	6.89	98.32	97.52	99.85
L_L-A-5	Rectangular	2525+18.37	A-5	A-6	90.38	90.03	1.00	5.00	4.00	175.02	0.20	145	16.51	7.22	98.30	97.83	99.54
L_L-A-50	Circular	2549+83.92	A-50	A-OUT1	87.11	87.00	1.00	0.00	2.00	36.79	0.30	14	24.81	4.36	94.18	94.19	93.16
L_L-A-51	Circular	2551+00.00	A-51	A-50	87.51	87.11	1.00	0.00	2.00	134.39	0.30	14	24.81	4.36	94.19	94.18	93.13
L_L-A-5OFF	Circular	2525+18.37	A-5OFF	A-5	90.40	90.38	1.00	0.00	2.50	15.00	0.12	123	16.80	24.68	99.56	98.30	97.77
L_L-A-6	Rectangular	2526+93.37	A-6	A-7	90.03	89.68	1.00	5.00	4.00	175.23	0.20	150	16.44	7.50	97.83	97.40	98.84
L_L-A-7	Rectangular	2528+68.35	A-7	A-8	89.68	89.42	1.00	5.00	4.00	132.85	0.20	157	16.34	7.80	97.40	97.13	98.14
L_L-A-8	Rectangular	2530+01.36	A-8	A-9	88.99	88.53	1.00	6.00	4.00	229.25	0.20	152	15.92	6.30	97.13	96.99	97.61
L_L-A-9	Rectangular	2532+30.90	A-9	A-12	88.53	88.00	1.00	6.00	4.00	262.46	0.20	160	15.93	6.66	97.03	96.20	96.69
L_L-AA-1	Circular	2554+83.94	AA-1	AA-2	85.51	85.40	1.00	0.00	2.50	110.43	0.10	14	23.98	2.74	94.09	94.08	93.08
L_L-AA-10	Rectangular	2559+94.68	AA-10	MH-AA1	85.20	85.05	1.00	5.00	3.00	150.84	0.10	40	15.97	2.65	94.08	94.07	92.95
L_L-AA-11	Rectangular	2561+33.68	AA-11	AA-10	85.35	85.20	1.00	4.00	3.00	149.76	0.10	37	15.97	3.04	94.08	94.08	92.93
L_L-AA-12	Rectangular	2562+83.68	AA-12	AA-11	85.50	85.35	1.00	4.00	3.00	150.00	0.10	28	15.97	2.29	94.08	94.08	92.87
L_L-AA-13	Rectangular	2564+37.71	AA-13	AA-12	86.65	86.50	1.00	3.00	3.00	150.12	0.10	24	16.01	2.70	94.08	94.08	93.49
L_L-AA-14	Circular	2566+83.81	AA-14	AA-13	86.90	86.65	1.00	0.00	3.00	250.02	0.10	19	16.01	2.73	94.08	94.08	93.89
L_L-AA-15	Circular	2568+09.24	AA-15	AA-14	87.03	86.90	1.00	0.00	3.00	125.43	0.10	18	23.37	2.48	94.09	94.08	93.45
L_L-AA-16	Circular	2568+75.00	AA-16	AA-15	87.60	87.53	1.00	0.00	2.50	74.68	0.10	18	23.68	3.58	94.10	94.09	93.19
L_L-AA-17	Circular	2569+59.44	AA-17	AA-16	87.68	87.60	1.00	0.00	2.50	75.52	0.10	18	23.36	3.59	94.10	94.10	93.45
L_L-AA-18	Circular	2570+84.53	AA-18	AA-17	88.30	88.18	1.00	0.00	2.00	125.10	0.10	14	23.68	4.31	94.11	94.10	93.89
L_L-AA-2	Circular	2555+81.97	AA-2	MH-AA2	85.40	85.32	1.00	0.00	2.50	78.43	0.10	16	16.11	3.15	94.08	94.07	93.03
L_L-AA-3	Circular	2558+41.97	AA-3	MH-AA2	83.35	83.18	1.00	0.00	4.50	168.40	0.10	34	15.95	2.15	94.07	94.07	92.97
L_L-AA-4	Circular	2559+33.94	AA-4	AA-3	83.44	83.35	1.00	0.00	4.50	93.84	0.10	32	15.95	1.99	94.08	94.07	92.96
L_L-AA-5	Circular	2560+67.03	AA-5	AA-4	84.08	83.94	1.00	0.00	4.00	133.09	0.10	27	15.95	2.11	94.08	94.08	92.93
L_L-AA-54	Circular	2555+84.93	AA-54	AA-55	86.05	85.75	1.00	0.00	2.50	148.99	0.20	12	16.06	2.32	94.09	94.08	93.03
L_L-AA-55	Circular	2557+32.06	AA-55	MH-AA1	85.25	85.05	1.00	0.00	3.00	99.21	0.20	16	16.06	2.18	94.08	94.07	93.00
L_L-AA-6	Circular	2563+39.39	AA-6	AA-5	84.70	84.58	1.00	0.00	3.50	123.97	0.10	22	15.95	2.31	94.08	94.08	92.89
L_L-AA-7	Circular	2565+33.94	AA-7	AA-6	85.54	85.20	1.00	0.00	3.00	342.94	0.10	18	15.95	2.45	94.08	94.08	92.76
L_L-AA-8	Circular	2566+79.39	AA-8	AA-7	85.65	85.54	1.00	0.00	3.00	106.16	0.10	12	15.96	1.74	94.09	94.08	92.74
L_L-AA-9	Circular	2567+83.94	AA-9	AA-8	86.79	86.65	1.00	0.00	2.00	143.84	0.10	8	24.42	2.42	94.10	94.09	92.85
L_AA-OUT1	**Natural**	**2556+73.29**	**AA-OUT1**	**E117-OUT**	**78.62**	**78.50**	**1.00**	**0.00**	**0.00**	**35.00**	**0.34**	**2073**	**17.57**	**1.69**	**94.09**	**94.09**	**114.24**

Table 10.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (100-Year) - Outfalls 9-16

7/12/2011

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_L-A-OUT1	Natural	2548+97.23	A-OUT1	MH-A4	78.69	78.69	1.00	0.00	0.00	70.00	0.00	1828	16.86	1.15	**94.19**	94.18	114.00
L_L-A-OUT2	Natural	2552+84.79	A-OUT2	AA-OUT1	79.10	78.62	1.00	0.00	0.00	293.00	0.16	2035	17.58	2.08	94.15	94.09	113.93
L_GES-1	Circular	2559+09.48	GES-1	GES-2	81.87	81.40	1.00	0.00	4.00	238.00	0.20	103	16.96	8.09	97.45	96.45	93.50
L_GES-2	Circular		GES-2	GES-3	81.40	80.91	1.00	0.00	4.00	240.00	0.20	92	17.91	7.16	96.45	95.55	93.50
L_GES-3	Circular		GES-3	GES-4	80.41	79.47	1.00	0.00	4.50	668.00	0.14	89	18.83	5.53	95.55	94.29	93.00
L_GES-4	Circular		GES-4	A-OUT1	79.47	78.81	1.00	0.00	4.50	22.00	3.00	99	19.55	6.14	94.29	94.19	90.80
L_L-MH-A1	Natural		MH-A1	A-OUT2	79.03	79.10	1.00	0.00	0.00	70.00	-0.10	1829	17.57	1.62	94.16	94.15	114.08
L_L-MH-A2	Natural		MH-A2	MH-A1	78.78	79.03	1.00	0.00	0.00	10.00	-2.50	1828	17.57	1.19	94.16	94.16	113.93
L_L-MH-A3	Natural		MH-A3	MH-A2	78.69	78.78	1.00	0.00	0.00	424.00	-0.02	1825	17.56	1.12	94.18	94.16	114.00
L_L-MH-A4	Natural		MH-A4	MH-A3	78.69	78.69	1.00	0.00	0.00	25.00	0.00	1825	16.87	1.42	94.18	94.18	104.96
L_L-MH-AA1	Circular	2558+38.68	MH-AA1	MH-AA2	81.63	81.29	1.00	0.00	5.00	342.10	0.10	55	15.97	2.76	94.07	94.07	92.98
L_L-MH-AA2	Circular	2556+72.05	MH-AA2	AA-OUT1	80.29	80.00	1.00	0.00	5.50	164.00	0.18	103	15.97	4.30	94.07	94.09	93.01
L-POND5C	Circular	2549+90.32	POND5C	A-22	84.96	84.89	1.00	0.00	3.00	74.00	0.10	-29	16.09	2.27	94.35	94.35	94.80
L-POND6C	Circular	2534+93.74	POND6C	A-12	88.10	88.00	1.00	0.00	3.00	45.00	0.22	-97	15.94	5.62	96.20	96.20	96.50
L-POND6D	Circular	2532+08.43	POND6D	A-34	88.23	88.03	1.00	0.00	3.00	100.00	0.20	-43	15.88	4.34	94.86	94.78	96.50
L_POND6E	Rectangular	2527+34.53	POND6E	A-30	89.42	89.31	1.00	5.00	4.00	113.50	0.10	-131	16.83	4.13	94.24	94.73	98.00
Outfalls 11																	
L_L-B-10	Rectangular	2581+44.39	B-10	B-12	83.21	82.84	1.00	4.00	3.00	366.26	0.10	47	16.25	3.87	91.58	91.57	90.66
L_L-B-12	Rectangular	2584+84.39	B-12	B-12A	82.84	82.67	1.00	5.00	3.00	167.98	0.10	54	16.25	3.57	91.57	91.57	90.35
L_L-B-12A	Rectangular	2586+17.93	B-12A	B-OUT1	82.67	82.66	1.00	5.00	3.00	10.07	0.12	60	16.25	3.97	91.57	91.57	90.29
L_L-B-13	Circular	2572+83.66	B-13	B-14	87.15	87.00	1.00	0.00	2.00	150.25	0.10	4	16.26	2.36	91.60	91.60	93.59
L_L-B-14	Circular	2574+33.80	B-14	B-15	86.50	86.45	1.00	0.00	2.50	49.91	0.10	9	16.25	2.74	91.60	91.60	92.61
L_L-B-15	Circular	2575+45.00	B-15	B-16	85.95	85.88	1.00	0.00	3.00	75.20	0.10	14	16.25	1.95	91.60	91.60	92.29
L_L-B-16	Rectangular	2575+58.83	B-16	B-17	85.88	85.78	1.00	3.00	3.00	100.00	0.10	17	16.25	1.93	91.60	91.60	92.55
L_L-B-17	Rectangular	2576+58.83	B-17	B-18	85.78	85.48	1.00	3.00	3.00	299.81	0.10	22	16.25	2.43	91.60	91.60	92.90
L_L-B-18	Rectangular	2579+50.00	B-18	B-19	85.48	85.35	1.00	3.00	3.00	124.99	0.10	28	16.26	3.12	91.60	91.60	92.20
L_L-B-19	Rectangular	2580+85.38	B-19	B-20	85.35	85.25	1.00	4.00	3.00	101.87	0.10	36	16.25	2.98	91.60	91.60	91.39
L_L-B-20	Rectangular	2581+85.60	B-20	B-OUT3	85.26	85.12	1.00	4.00	3.00	133.92	0.10	43	16.25	3.55	91.60	91.60	91.75
L_L-B-22	Circular	2587+40.10	B-22	B-OUT1	82.87	82.66	1.00	0.00	2.50	105.78	0.20	15	16.25	3.08	91.57	91.57	90.24
L_L-B-24	Circular	2589+39.39	B-24	B-22	83.64	83.37	1.00	0.00	2.00	133.43	0.20	8	30.61	2.53	91.57	91.57	90.18
L_L-B-25	Rectangular	2584+80.35	B-25	B-OUT3	80.36	80.11	1.00	5.00	3.00	259.23	0.10	81	16.26	5.36	91.60	91.60	91.14
L_L-B-26	Rectangular	2587+00.00	B-26	B-25	80.46	80.36	1.00	5.00	3.00	100.15	0.10	74	16.26	4.90	91.60	91.60	90.49
L_L-B-27	Rectangular	2588+00.00	B-27	B-26	80.51	80.46	1.00	5.00	3.00	49.85	0.10	69	16.26	4.54	91.60	91.60	90.66
L_L-B-28	Rectangular	2588+58.77	B-28	B-27	80.64	80.51	1.00	4.00	3.00	125.00	0.10	64	16.26	5.29	91.64	91.60	91.10
L_L-B-3	Circular	2571+39.39	B-3	B-4	85.18	85.01	1.00	0.00	2.00	174.85	0.10	6	16.26	1.90	91.58	91.58	92.72
L_L-B-4	Circular	2572+83.89	B-4	B-5	84.51	84.31	1.00	0.00	2.50	199.78	0.10	12	16.26	2.47	91.58	91.58	92.02
L_L-B-5	Circular	2574+39.39	B-5	B-6	83.81	83.66	1.00	0.00	3.00	149.89	0.10	19	16.26	2.69	91.58	91.58	91.22
L_L-B-6	Rectangular	2576+33.78	B-6	B-7	83.66	83.51	1.00	3.00	3.00	150.00	0.10	25	16.26	2.73	91.58	91.58	91.03
L_L-B-7	Rectangular	2577+89.39	B-7	B-9	83.51	83.35	1.00	4.00	3.00	156.60	0.10	30	16.26	2.50	91.58	91.58	90.90
L_L-B-9	Rectangular	2579+40.38	B-9	B-10	83.35	83.21	1.00	4.00	3.00	143.61	0.10	41	16.26	3.40	91.58	91.58	90.78
L_L-B-OUT1	Trapezoidal	2586+28.00	B-OUT1	MH-B4	79.59	79.48	1.00	10.00	11.00	109.00	0.10	633	16.55	1.85	91.57	91.57	90.65
L_L-B-OUT3	Trapezoidal	2583+21.19	B-OUT3	MH-B6	80.09	80.01	1.00	10.00	11.00	80.00	0.10	610	17.30	1.87	**91.60**	91.59	92.21
L_L-MH-B1	Circular	2589+37.61	MH-B1	MH-B2	80.92	80.76	1.00	0.00	3.00	115.47	0.14	57	16.49	7.86	92.51	91.79	92.29
L_L-MH-B2	Rectangular	2589+38.16	MH-B2	MH-B3	80.76	80.72	1.00	4.00	3.00	41.54	0.10	56	16.40	4.62	91.79	91.74	91.38
L_L-MH-B3	Rectangular	2589+38.16	MH-B3	B-28	80.72	80.64	1.00	4.00	3.00	79.39	0.10	56	16.40	4.62	91.74	91.64	91.38
L_L-MH-B4	**Trapezoidal**		**MH-B4**	**SYS-B-OUT**	**79.48**	**79.16**	**1.00**	**10.00**	**11.00**	**330.00**	**0.10**	**630**	**16.80**	**2.38**	**91.57**	**91.55**	**91.00**
L_L-MH-B5	Trapezoidal		MH-B5	B-OUT1	79.67	79.59	1.00	10.00	11.00	86.00	0.09	609	17.29	1.81	91.58	91.57	91.00
L_L-MH-B6	Trapezoidal		MH-B6	MH-B5	80.01	79.67	1.00	10.00	11.00	337.00	0.10	609	17.29	1.77	91.59	91.58	91.50
L_L-MH-B7	Trapezoidal		MH-B7	B-OUT3	83.18	80.09	1.00	10.00	11.00	36.00	8.58	554	17.68	4.37	91.58	91.60	94.80
L_L-MH-B8	Natural		MH-B8	MH-B7	83.86	83.18	1.00	0.00	0.00	206.00	0.33	550	17.55	6.19	91.91	91.58	93.73
Outfalls 12																	
L_L-C-1	Circular	2597+00.00	C-1	MH-C1	82.00	81.93	1.00	0.00	3.00	34.91	0.20	25	16.13	3.47	91.21	91.21	89.81
L_L-C-12	Rectangular	2603+25.00	C-12	C-6	81.15	81.05	1.00	4.00	3.00	100.09	0.10	28	15.86	2.35	91.30	91.28	89.32
L_L-C-13	Rectangular	2604+53.77	C-13	C-12	81.27	81.15	1.00	3.00	3.00	120.00	0.10	26	15.86	2.84	91.35	91.30	89.23
L_L-C-14	Rectangular	2604+83.92	C-14	C-13	81.30	81.27	1.00	3.00	3.00	30.15	0.10	23	15.86	2.50	91.36	91.35	89.21
L_L-C-15	Circular	2605+53.77	C-15	C-14	81.37	81.30	1.00	0.00	3.00	69.85	0.10	20	16.27	2.85	91.39	91.36	89.08
L_L-C-2	Rectangular	2598+08.91	C-2	MH-C1	80.63	80.54	1.00	4.00	3.00	90.09	0.10	40	15.87	3.33	91.22	91.21	89.72
L_L-C-21	Circular	2597+39.39	C-21	MH-C2	82.35	82.09	1.00	0.00	3.00	256.54	0.10	22	16.25	3.11	91.09	91.09	89.70
L_L-C-22	Circular	2599+40.10	C-22	C-21	82.50	82.35	1.00	0.00	3.00	153.05	0.10	17	16.25	2.35	91.09	91.09	89.59
L_L-C-23	Circular	2600+95.79	C-23	C-22	83.66	83.50	1.00	0.00	2.00	155.69	0.10	6	31.32	2.03	91.10	91.09	89.47
L_L-C-30	Circular	2592+20.80	C-30	C-31	83.93	83.70	1.00	0.00	2.00	112.98	0.20	18	28.66	5.51	91.29	91.24	91.10
L_L-C-31	Circular	2593+10.00	C-31	C-32	83.70	83.30	1.00	0.00	2.00	200.00	0.20	9	29.17	2.76	91.24	91.23	90.36
L_L-C-32	Circular	2595+33.77	C-32	C-1	82.80	82.50	1.00	0.00	2.50	150.15	0.20	15	16.13	2.98	91.23	91.21	89.92
L_L-C-5	Rectangular	2601+33.77	C-5	C-2	80.95	80.63	1.00	4.00	3.00	324.86	0.10	35	15.87	2.93	91.27	91.22	89.47
L_L-C-6	Rectangular	2602+33.69	C-6	C-5	81.05	80.95	1.00	4.00	3.00	99.91	0.10	31	15.87	2.57	91.28	91.27	89.39
L_L-C-7	Circular	2591+93.68	C-7	C-8	83.79	83.50	1.00	0.00	2.00	146.42	0.20	13	30.57	4.09	91.11	91.10	90.06
L_L-C-8	Circular	2593+39.39	C-8	C-9	83.00	82.73	1.00	0.00	2.50	136.58	0.20	16	16.25	3.23	91.10	91.10	90.00
L_L-C-9	Circular	2594+76.68	C-9	MH-C2	82.23	82.12	1.00	0.00	3.00	53.83	0.20	22	16.25	3.05	91.10	91.09	89.94

Table 10.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (100-Year) - Outfalls 9-16

7/12/2011

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_L-C-OUT	Natural	2595+83.66	C-OUT	MH-C4	79.64	79.39	1.00	0.00	8.50	250.00	0.10	242	16.00	0.98	91.10	91.09	90.32
L_L-MH-C1	Rectangular	2597+22.00	MH-C1	MH-C2	80.54	79.68	2.00	5.00	3.00	340.25	0.25	207	16.03	6.84	91.21	91.09	89.78
L_L-MH-C2	Rectangular	2595+30.51	MH-C2	C-OUT	79.68	79.64	2.00	5.00	3.00	15.54	0.25	248	16.03	8.20	91.09	91.10	89.89
L_L-MH-C3	Circular	2597+43.79	MH-C3	MH-C1	80.65	80.54	1.00	0.00	4.50	48.14	0.23	178	16.54	11.08	91.44	91.21	90.39
L-MH-C4	**Natural**		**MH-C4**	**SYS-C-OUT**	**79.39**	**79.34**	**1.00**	**0.00**	**8.50**	**50.00**	**0.10**	**235**	**16.00**	**0.92**	**91.09**	**91.09**	**89.00**
Outfalls 13																	
L_L-D-1	Circular	2610+83.96	D-1	D-2	80.90	80.50	1.00	0.00	3.00	142.00	0.28	40	15.96	7.10	89.81	89.62	88.14
L_L-D-10	Circular	2622+54.39	D-10	D-9	80.90	80.50	1.00	0.00	2.50	143.88	0.28	15	0.00	4.03	89.16	89.16	87.16
L_L-D-11	Circular	2624+89.90	D-11	D-10	81.82	81.40	1.00	0.00	2.00	150.51	0.28	12	32.37	4.41	89.16	89.16	86.97
L_L-D-14	Circular	2620+33.62	D-14	D-20	77.88	77.60	1.00	0.00	3.50	98.98	0.28	37	0.00	6.02	89.33	89.34	87.56
L_L-D-15	Circular	2621+83.62	D-15	D-14	78.80	78.38	1.00	0.00	3.00	150.00	0.28	28	0.00	6.74	89.33	89.33	87.45
L_L-D-16	Circular	2624+25.00	D-16	D-15	79.44	78.80	1.00	0.00	3.00	230.59	0.28	26	0.00	5.05	89.33	89.33	87.18
L_L-D-17	Circular	2625+38.62	D-17	D-16	79.79	79.44	1.00	0.00	3.00	124.41	0.28	24	32.50	4.76	89.33	89.33	86.94
L_L-D-18	Circular	2626+84.64	D-18	D-17	80.70	80.29	1.00	0.00	2.50	146.02	0.28	21	32.57	6.22	89.33	89.33	86.74
L_L-D-19	Circular	2628+33.62	D-19	D-18	81.62	81.20	1.00	0.00	2.00	148.98	0.28	17	32.58	5.27	89.33	89.33	86.75
L_L-D-2	Circular	2612+60.00	D-2	D-4	80.00	79.25	1.00	0.00	3.50	267.92	0.28	45	15.97	5.26	89.62	89.47	88.15
L_L-D-20	Circular	2619+78.92	D-20	D-OUT2	77.60	77.41	1.00	0.00	3.50	66.33	0.28	41	0.00	7.24	89.34	89.34	87.64
L_L-D-21	Circular	2616+83.92	D-21	D-OUT1	78.56	78.49	1.00	0.00	3.00	27.69	0.28	34	0.00	7.24	89.15	89.15	87.72
L_L-D-29	Circular	2602+89.39	D-29	D-30	83.09	82.58	1.00	0.00	2.00	256.26	0.20	10	29.83	4.64	89.44	89.26	89.22
L_L-D-3	Circular	2608+35.00	D-3	D-1	82.32	81.90	1.00	0.00	2.00	150.03	0.28	8	31.54	4.46	89.82	89.81	88.40
L_L-D-30	Circular	2606+75.39	D-30	D-31	82.08	81.85	1.00	0.00	2.50	115.32	0.20	15	30.71	5.72	89.26	89.23	88.79
L_L-D-31	Circular	2607+89.92	D-31	D-32	81.35	81.13	1.00	0.00	3.00	110.09	0.20	22	0.00	3.90	89.23	89.20	88.58
L_L-D-32	Circular	2610+61.54	D-32	D-34	81.13	80.34	1.00	0.00	3.00	395.97	0.20	27	0.00	6.61	89.20	89.16	88.38
L_L-D-34	Circular	2612+95.66	D-34	D-35	79.84	79.55	1.00	0.00	3.50	143.98	0.20	38	16.14	4.92	89.16	89.15	88.15
L_L-D-35	Circular	2614+17.08	D-35	D-OUT1	79.55	79.12	1.00	0.00	3.50	217.32	0.20	42	16.14	7.17	89.15	89.15	88.15
L_L-D-4	Circular	2614+94.45	D-4	D-5	79.25	78.86	1.00	0.00	3.50	139.63	0.28	49	15.98	5.94	89.47	89.40	88.15
L_L-D-5	Circular	2616+34.26	D-5	D-6	78.86	78.64	1.00	0.00	3.50	80.34	0.28	51	15.99	7.07	89.40	89.37	88.09
L_L-D-6	Circular	2616+75.77	D-6	D-OUT2	78.14	77.71	1.00	0.00	4.00	153.67	0.28	53	15.99	6.96	89.37	89.34	88.00
L_L-D-7	Circular	2617+62.20	D-7	D-21	78.72	78.56	1.00	0.00	3.00	55.50	0.28	31	0.00	6.26	89.15	89.15	87.66
L_L-D-8	Circular	2619+15.37	D-8	D-7	79.21	78.72	1.00	0.00	3.00	175.98	0.28	26	0.00	4.97	89.15	89.15	87.36
L_L-D-9	Circular	2621+95.51	D-9	D-8	80.50	79.71	1.00	0.00	2.50	280.37	0.28	20	0.00	6.36	89.16	89.15	87.36
L_L-D-OUT1	Rectangular	2616+45.00	D-OUT1	MH-D1	71.77	71.66	1.00	8.00	12.00	100.00	0.11	592	16.41	6.45	89.15	89.09	88.01
Link837	Rectangular	2618+71.50	D-OUT2	D-OUT1	72.11	71.77	1.00	8.00	12.00	345.00	0.10	577	16.62	6.00	89.34	89.15	87.71
L_L-MH-D1	**Rectangular**		**MH-D1**	**SYS-D-OUT**	**71.66**	**70.96**	**1.00**	**8.00**	**12.00**	**160.00**	**0.44**	**591**	**16.40**	**6.79**	**89.09**	**89.07**	**88.00**
L_L-MH-D2	Rectangular		MH-D2	D-OUT2	72.26	72.11	1.00	8.00	12.00	150.00	0.10	592	16.54	6.15	89.43	89.34	88.04
Outfalls 14																	
L_L-E-1	Circular	2630+39.39	E-1	E-2	80.10	80.01	1.00	0.00	3.00	95.10	0.10	17	16.26	5.88	86.58	86.58	86.12
L_L-E-10	Rectangular	2641+59.39	E-10	MH-E1	78.98	78.90	1.00	5.00	3.00	82.68	0.10	51	16.25	3.60	86.57	86.57	86.40
L_L-E-11	Rectangular	2642+84.79	E-11	MH-E1	78.90	78.85	1.00	4.00	3.00	42.71	0.10	43	16.25	3.60	86.57	86.57	85.96
L_L-E-12	Rectangular	2644+34.82	E-12	E-18	79.05	78.95	1.00	4.00	3.00	95.44	0.10	34	16.25	2.82	86.57	86.57	86.10
L_L-E-13	Rectangular	2645+84.70	E-13	E-12	79.20	79.05	1.00	4.00	3.00	149.88	0.10	29	16.25	2.74	86.57	86.57	86.63
L_L-E-14	Rectangular	2648+74.39	E-14	E-13	79.47	79.20	1.00	3.00	3.00	275.00	0.10	24	16.25	6.30	86.57	86.57	86.75
L_L-E-15	Circular	2650+09.70	E-15	E-14	79.62	79.47	1.00	0.00	3.00	150.00	0.10	20	16.25	6.43	86.58	86.57	86.22
L_L-E-16	Circular	2651+39.39	E-16	E-15	79.75	79.62	1.00	0.00	3.00	129.69	0.10	14	16.25	2.46	86.58	86.58	85.77
L_L-E-17	Circular	2652+56.41	E-17	E-16	80.87	80.75	1.00	0.00	2.00	117.02	0.10	10	29.23	4.65	86.58	86.58	86.18
L_L-E-18	Rectangular	2643+74.39	E-18	E-11	78.95	78.90	1.00	4.00	3.00	54.60	0.10	39	16.25	3.25	86.57	86.57	85.77
L_L-E-2	Rectangular	2631+34.49	E-2	E-6	80.01	79.58	1.00	3.00	3.00	421.71	0.10	24	16.25	6.33	86.58	86.57	86.45
L_L-E-20	Circular	2630+80.00	E-20	E-21	81.48	81.33	1.00	0.00	2.00	150.00	0.10	6	16.27	4.36	86.58	86.58	87.11
L_L-E-21	Rectangular	2633+83.62	E-21	E-22	80.33	80.23	1.00	3.00	3.00	101.02	0.10	41	16.26	6.02	86.58	86.58	86.58
Link840	Circular	2633+83.62	E-21OFF	E-21	80.85	80.83	1.00	0.00	2.50	14.00	0.10	30	16.27	6.48	86.58	86.58	86.93
L_L-E-22	Rectangular	2635+50.00	E-22	E-23	80.23	80.10	1.00	4.00	3.00	132.79	0.10	49	16.26	4.06	86.58	86.58	86.23
L_L-E-23	Rectangular	2636+17.43	E-23	E-25	80.10	79.78	1.00	4.00	3.00	319.48	0.10	54	16.25	4.51	86.58	86.58	86.70
L_L-E-25	Rectangular	2639+36.91	E-25	E-26	79.78	79.62	1.00	4.00	3.00	155.07	0.10	60	16.26	6.67	86.58	86.57	86.75
L_L-E-26	Rectangular	2640+10.00	E-26	E-27	79.62	79.53	1.00	5.00	3.00	92.65	0.10	65	16.26	4.32	86.57	86.57	86.21
L_L-E-27	Rectangular	2641+84.64	E-27	E-28	79.53	79.40	1.00	5.00	3.00	135.41	0.10	73	16.27	6.54	86.57	86.57	85.88
L_L-E-28	Rectangular	2643+20.04	E-28	MH-E1	78.39	78.10	2.00	6.00	3.00	291.35	0.10	190	16.26	5.27	86.57	86.57	86.36
L_L-E-30	Rectangular	2645+70.00	E-30	E-28	78.69	78.39	1.00	5.00	3.00	293.84	0.10	100	16.08	6.63	86.61	86.57	86.48
Link820	Rectangular	2646+14.29	E-30OFF	E-30	80.55	80.52	1.00	5.00	3.00	14.01	0.20	32	16.25	6.22	86.61	86.61	86.40
L_L-E-31	Rectangular	2647+58.62	E-31	E-30	78.83	78.69	1.00	5.00	3.00	144.74	0.10	75	16.06	4.96	86.68	86.61	85.97
L_L-E-32	Rectangular	2648+86.13	E-32	E-31	78.96	78.83	1.00	4.00	3.00	127.51	0.10	69	16.06	6.75	86.78	86.68	85.53
L_L-E-33	Rectangular	2649+84.64	E-33	E-32	79.06	78.96	1.00	4.00	3.00	98.50	0.10	65	16.12	5.38	86.85	86.78	85.18
L_L-E-34	Rectangular	2651+30.00	E-34	E-33	79.20	79.06	1.00	4.00	3.00	135.68	0.10	59	16.09	4.87	86.96	86.85	85.66
Link836	Rectangular	2651+73.01	E-34OFF	E-34	79.25	79.20	1.00	4.00	3.00	52.69	0.10	54	16.09	4.47	87.00	86.96	85.25
L_L-E-4	Circular	2627+89.39	E-4	E-5	81.35	81.23	1.00	0.00	2.00	123.29	0.10	5	0.00	4.32	86.58	86.58	87.01
L_L-E-5	Circular	2629+07.98	E-5	E-1	80.73	80.60	1.00	0.00	2.50	131.41	0.10	9	16.26	4.85	86.58	86.58	86.58
L_L-E-6	Rectangular	2633+39.39	E-6	E-7	79.58	79.40	1.00	4.00	3.00	183.19	0.10	31	16.25	2.65	86.57	86.57	86.41
L_L-E-7	Rectangular	2637+39.39	E-7	E-8	79.40	79.26	1.00	4.00	3.00	137.86	0.10	42	16.25	6.60	86.57	86.57	85.77
L_L-E-8	Rectangular	2638+59.39	E-8	E-10	79.26	78.98	1.00	5.00	3.00	282.14	0.10	47	16.25	3.13	86.57	86.57	86.25

Table 10.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (100-Year) - Outfalls 9-16

7/12/2011

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_L-E-OUT	Trapezoidal	2642+93.77	E-OUT	MH-E2	78.09	77.78	1.00	8.00	8.00	310.00	0.10	274	16.26	3.44	86.57	86.57	86.14
L_L-MH-E1	Rectangular	2642+40.00	MH-E1	E-OUT	78.10	78.09	2.00	6.00	3.00	16.60	0.10	284	16.26	7.88	86.57	86.57	86.11
L_L-MH-E2	**Trapezoidal**		**MH-E2**	**SYS-E-OUT**	**77.78**	**77.73**	**1.00**	**8.00**	**8.00**	**50.00**	**0.10**	**266**	**16.21**	**3.95**	**86.57**	**86.57**	**86.00**
Outfalls 15																	
L_L-F-1	Circular	2654+64.39	F-1	F-2	81.03	80.49	1.00	0.00	2.00	191.26	0.28	4	16.25	2.22	85.51	85.43	86.35
L_L-F-10	Circular	2670+84.70	F-10	F-9	76.05	75.85	1.00	0.00	3.50	200.00	0.10	27	16.26	2.79	85.36	85.37	83.92
L_L-F-11	Circular	2672+29.19	F-11	F-10	76.20	76.05	1.00	0.00	3.50	154.69	0.10	25	16.26	2.58	85.37	85.36	83.22
L_L-F-12	Circular	2675+51.39	F-12	F-11	76.45	76.20	1.00	0.00	3.50	250.00	0.10	22	16.26	2.25	85.36	85.37	82.97
L_L-F-13	Circular	2675+76.61	F-13	F-12	77.04	76.95	1.00	0.00	3.00	87.22	0.10	24	31.32	3.39	85.36	85.36	83.27
L_L-F-14	Circular	2677+13.58	F-14	F-13	77.17	77.04	1.00	0.00	3.00	136.97	0.10	29	31.14	4.02	85.36	85.36	83.75
L_L-F-15	Circular	2655+83.62	F-15	F-16	80.01	79.69	1.00	0.00	2.00	114.01	0.28	10	16.26	3.67	85.56	85.56	85.18
L_L-F-15A	Circular	2654+33.62	F-15A	F-15	80.43	80.01	1.00	0.00	2.00	150.00	0.28	5	16.26	2.24	85.65	85.56	85.71
L_L-F-16	Circular	2656+10.00	F-16	F-17	79.19	78.95	1.00	0.00	2.50	87.01	0.28	14	16.25	2.86	85.56	85.56	84.79
L_L-F-17	Circular	2657+84.64	F-17	F-18	78.95	78.59	1.00	0.00	2.50	127.69	0.28	22	16.25	4.35	85.56	85.55	84.48
L_L-F-18	Circular	2660+10.00	F-18	F-20	78.09	77.15	1.00	0.00	3.00	335.94	0.28	48	16.25	6.72	85.55	85.46	84.93
L_L-F-2	Circular	2657+64.67	F-2	F-4	80.49	80.00	1.00	0.00	2.00	174.72	0.28	11	16.26	4.60	85.43	85.41	85.68
L_L-F-20	Rectangular	2662+48.26	F-20	F-6	74.85	74.28	2.00	8.00	5.00	285.09	0.20	521	16.28	6.49	85.46	85.39	84.96
L_L-F-25	Rectangular	2663+95.00	F-25	F-20	75.12	74.85	2.00	8.00	5.00	136.38	0.20	469	16.31	5.84	85.59	85.46	84.48
L_L-F-26	Circular	2664+83.78	F-26	F-25	75.95	75.75	1.00	0.00	3.50	99.15	0.20	37	16.26	3.84	85.59	85.59	84.83
L_L-F-28	Circular	2668+88.27	F-28	F-26	77.20	76.45	1.00	0.00	3.00	374.84	0.20	31	16.26	4.29	85.61	85.59	84.66
L_L-F-29	Circular	2669+84.64	F-29	F-28	77.45	77.20	1.00	0.00	3.00	126.02	0.20	18	16.26	2.58	85.62	85.61	84.03
L_L-F-3	Circular	2678+84.39	F-3	F-14	78.35	78.17	1.00	0.00	2.00	180.37	0.10	19	31.28	6.03	85.36	85.36	84.39
L_L-F-31	Circular	2672+34.64	F-31	F-29	78.45	77.95	1.00	0.00	2.50	250.00	0.20	14	16.26	2.92	85.63	85.62	83.95
L_L-F-32	Circular	2673+22.22	F-32	F-31	79.08	78.95	1.00	0.00	2.00	64.70	0.20	11	16.26	3.77	85.64	85.63	84.18
L_L-F-33	Circular	2674+33.39	F-33	F-32	79.35	79.08	1.00	0.00	2.00	134.05	0.20	13	30.24	3.95	85.65	85.64	84.65
L_L-F-4	Circular	2658+89.39	F-4	F-5	79.50	79.26	1.00	0.00	2.50	84.38	0.28	19	16.26	5.22	85.41	85.41	85.07
L_L-F-5	Circular	2660+23.77	F-5	F-6	78.76	78.18	1.00	0.00	3.00	207.07	0.28	26	16.26	3.78	85.41	85.39	85.36
L_L-F-6	Rectangular	2663+74.39	F-6	F-OUT	74.28	74.25	2.00	8.00	5.00	14.01	0.20	601	16.26	7.50	85.39	85.39	86.09
L_L-F-7	Circular	2665+84.70	F-7	F-6	75.05	74.69	1.00	0.00	4.00	353.87	0.10	48	16.26	3.83	85.38	85.39	86.17
L_L-F-8	Circular	2667+34.70	F-8	F-7	75.20	75.05	1.00	0.00	4.00	150.00	0.10	43	16.26	3.44	85.37	85.38	85.49
L_L-F-9	Circular	2668+29.39	F-9	F-8	75.35	75.20	1.00	0.00	4.00	150.00	0.10	38	16.26	3.04	85.37	85.37	84.82
L_L-F-OUT	Natural	2662+90.99	F-OUT	MH-F2	74.25	74.12	1.00	0.00	0.00	44.00	0.29	600	16.26	3.25	85.39	85.39	86.76
L_L-MH-F1	Circular	2664+14.93	MH-F1	F-25	75.22	75.12	1.00	0.00	4.00	49.95	0.20	427	16.98	33.56	89.38	85.59	85.49
L_L-MH-F2	**Natural**		**MH-F2**	**SYS-F-OUT**	**74.12**	**73.69**	**1.00**	**0.00**	**0.00**	**855.00**	**0.05**	**567**	**16.27**	**3.25**	**85.39**	**85.35**	**86.65**
Outfalls 16																	
L_L-G-10	Circular	2690+13.90	G-10	G-9	75.76	75.55	1.00	0.00	3.00	74.51	0.28	31	16.31	4.34	84.52	84.51	81.96
L_L-G-12	Circular	2692+09.62	G-12	G-10	76.81	76.26	1.00	0.00	2.50	195.72	0.28	22	16.14	4.48	84.52	84.52	82.94
L_L-G-13	Circular	2694+69.39	G-13	G-12	77.88	77.31	1.00	0.00	2.00	204.87	0.28	15	23.65	4.84	84.53	84.52	83.96
L_L-G-15	Circular	2677+65.00	G-15	G-16	78.05	77.70	1.00	0.00	2.50	126.07	0.28	26	22.91	5.20	84.83	84.79	84.05
L_L-G-16	Circular	2678+84.64	G-16	G-18	77.20	76.94	1.00	0.00	3.00	91.51	0.28	28	16.02	5.20	84.79	84.75	83.23
L_L-G-18	Circular	2679+76.15	G-18	G-19	76.44	75.30	1.00	0.00	3.50	407.47	0.28	39	16.00	3.98	84.75	84.64	83.55
L_L-G-19	Circular	2682+45.00	G-19	G-20	75.30	74.88	1.00	0.00	3.50	149.85	0.28	51	16.00	5.25	84.64	84.59	83.28
L_L-G-20	Circular	2685+33.47	G-20	G-21	74.33	73.78	1.00	0.00	4.00	199.30	0.28	58	15.96	4.57	84.59	84.57	82.53
L_L-G-21	Circular	2687+32.77	G-21	G-22	73.78	73.60	1.00	0.00	4.00	61.86	0.28	62	15.86	4.90	84.57	84.56	81.84
L_L-G-22	Circular	2687+46.84	G-22	MH-G2	73.60	73.20	1.00	0.00	4.00	142.87	0.28	67	15.86	5.29	84.56	84.54	81.81
L_L-G-23	Circular	2690+04.42	G-23	MH-G2	74.95	74.82	1.00	0.00	3.00	47.42	0.28	22	15.90	3.02	84.54	84.54	81.74
L_L-G-24	Circular	2690+33.62	G-24	G-23	75.59	75.45	1.00	0.00	2.50	48.98	0.28	17	15.90	3.35	84.55	84.54	81.71
L_L-G-25	Circular	2691+58.62	G-25	G-24	75.94	75.59	1.00	0.00	2.50	125.00	0.28	13	15.92	2.56	84.55	84.55	81.86
L_L-G-26	Circular	2692+63.62	G-26	G-25	76.73	76.44	1.00	0.00	2.00	105.00	0.28	15	27.78	4.85	84.55	84.55	82.39
L_L-G-3	Circular	2681+59.70	G-3	G-4	78.11	77.62	1.00	0.00	2.00	175.00	0.28	15	23.03	4.80	84.52	84.52	84.29
L_L-G-4	Circular	2683+34.70	G-4	G-5	77.62	77.27	1.00	0.00	2.00	125.00	0.28	10	16.25	3.44	84.52	84.52	83.42
L_L-G-5	Circular	2684+59.70	G-5	G-6	76.77	76.49	1.00	0.00	2.50	100.00	0.28	14	16.25	2.87	84.52	84.52	82.79
L_L-G-6	Circular	2685+59.70	G-6	G-7	76.49	76.15	1.00	0.00	2.50	119.69	0.28	16	16.07	3.30	84.52	84.51	82.29
L_L-G-7	Circular	2686+25.63	G-7	MH-G1	76.15	75.70	1.00	0.00	2.50	159.59	0.28	19	16.01	3.91	84.51	84.51	81.83
L_L-G-8	Circular	2688+80.78	G-8	MH-G1	75.39	75.27	1.00	0.00	3.00	41.81	0.28	38	15.99	5.30	84.51	84.51	81.88
L_L-G-9	Circular	2689+74.06	G-9	G-8	75.55	75.39	1.00	0.00	3.00	58.61	0.28	36	15.99	5.05	84.51	84.51	81.73
L_L-G-OUT	Circular	2688+03.42	G-OUT	MH-G3	69.57	69.27	1.00	0.00	6.00	477.00	0.06	133	15.90	4.67	84.49	84.47	82.02
L_L-MH-G1	Circular	2688+38.98	MH-G1	G-OUT	71.39	70.07	1.00	0.00	5.50	415.94	0.32	133	15.90	5.56	84.51	84.49	82.09
L_L-MH-G2	Circular	2689+37.43	MH-G2	MH-G1	72.70	71.86	1.00	0.00	4.50	300.58	0.28	87	15.86	5.42	84.54	84.51	81.76
L_L-MH-G3	Circular		MH-G3	MH-G4	68.77	68.51	1.00	0.00	6.50	518.00	0.05	299	16.01	8.98	84.47	84.24	82.92
L_L-MH-G4	Circular		MH-G4	MH-G5	68.51	68.21	1.00	0.00	6.50	230.00	0.13	299	16.01	8.99	84.24	84.14	82.82
L_L-MH-G5	**Circular**		**MH-G5**	**SYS-G-OUT**	**68.21**	**68.11**	**1.00**	**0.00**	**6.50**	**100.00**	**0.10**	**299**	**16.01**	**8.99**	**84.14**	**84.10**	**81.62**

Table 11.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (100-Year) - Outfalls 17-19

Model: US290_SegA_BNGLHOL_Mit100-8-31-09.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 17-19																	
L_L-A-1	Rectangular		A-1	A-2	74.39	74.00	1	6.00	4.00	388.61	0.10	66	18.71	2.73	83.58	83.55	82.75
L_L-J-A-10	Circular	2738+05.41	A-10	J-A-10	73.44	73.10	1	0.00	5.00	342.60	0.10	96	16.02	4.87	83.36	83.02	81.93
E11504_1	**Rectangular**	**2697+00.00**	**A102**	**E11504.1**	**71.38**	**70.92**	**1**	**8.00**	**5.00**	**221.00**	**0.21**	**200**	**16.08**	**4.98**	**82.47**	**82.24**	**80.50**
L_L-A-11A	Rectangular	2755+15.41	A-11	A-12	72.67	72.56	1	8.00	5.00	115.27	0.10	232	15.81	5.78	82.85	82.81	82.19
L-A102	Rectangular		A-11	Node386	71.81	71.79	1	8.00	5.00	20.00	0.10	188	16.08	4.69	82.85	82.82	82.19
L_L-A-12	Rectangular	2733+57.06	A-12	J-A-12	72.56	72.29	1	8.00	5.00	268.38	0.10	252	15.81	6.28	82.81	82.68	81.79
Link335	Rectangular		A-13	B-9	71.97	71.38	1	8.00	5.00	583.67	0.10	298	15.81	7.45	82.52	82.29	81.84
L-A-2	Rectangular		A-2	J-A-2	74.00	73.65	1	6.00	4.00	346.60	0.10	74	16.00	3.07	83.55	83.41	81.67
Link348	Circular		A-2	J-A-9	74.00	73.68	1	0.00	4.00	320.00	0.10	25	15.78	2.01	83.55	83.55	81.67
L_L-A-3	Rectangular	2717+68.38	A-3	J-A-5	73.35	73.14	1	6.00	4.00	211.25	0.10	122	16.09	5.07	83.29	83.07	81.67
L_L-A-5	Circular	2756+19.68	A-5	J-A-5	74.78	74.00	1	0.00	3.50	388.75	0.20	18	16.10	1.89	83.10	83.07	81.67
Link347	Circular	2706+20.21	A-5	J-A-12	74.77	74.07	1	0.00	2.50	280.00	0.25	24	15.81	4.88	83.10	82.68	81.67
L_L-A-8	Circular	2747+99.00	A-8	J-A-8	74.60	74.34	1	0.00	4.00	256.78	0.10	47	15.82	3.73	83.90	83.82	81.79
L_L-J-A-9	Circular		A-9	J-A-9	74.03	73.68	1	0.00	4.50	351.34	0.10	71	15.82	4.46	83.76	83.55	81.90
L_L-B-1	Circular	2754+90.00	B-1	J-B-2	73.54	73.24	1	0.00	4.00	303.54	0.10	39	16.26	3.48	82.52	82.48	81.67
Link344	Rectangular		B-10	POND4D	70.93	70.86	1	8.00	5.00	73.00	0.10	321	15.81	8.02	82.15	82.14	81.79
L_L-B-2	Circular	2718+00.00	B-2	J-B-3	72.35	72.19	1	0.00	4.50	160.18	0.10	53	16.26	3.31	82.42	82.40	81.67
L_L-B-4	Circular	2705+49.95	B-4	J-B-3	73.15	72.79	1	0.00	3.00	142.94	0.25	25	16.26	3.54	82.41	82.40	81.17
Link345	Rectangular	2699+56.78	B-6	POND4D	71.91	71.57	1	6.00	5.00	70.00	0.49	213	16.17	8.92	82.18	82.14	81.47
Link323	Circular		B-7A	POND4D	72.98	72.45	1	0.00	2.00	106.00	0.50	39	15.87	12.32	82.62	82.14	79.81
L-B-10	Rectangular	2755+00.00	B-8	B-10	71.16	70.93	1	8.00	5.00	225.00	0.10	321	15.81	8.02	82.21	82.15	81.09
L_L-B-9	Rectangular	2712+00.00	B-9	B-8	71.38	71.16	1	8.00	5.00	226.70	0.10	308	15.81	7.68	82.29	82.21	81.89
L_L-BNGL01	Circular	2737+00.00	BNGL01	BNGL02	68.04	67.96	1	0.00	4.00	63.40	0.13	113	16.23	8.92	79.31	79.14	77.83
L_L-BNGL03	Rectangular	2749+26.77	BNGL02	BNGL03	67.96	67.41	1	6.00	5.00	417.73	0.13	157	15.99	5.23	79.14	78.95	76.72
L-BNGL03	Rectangular	2752+00.34	BNGL03	MH-8	66.44	66.31	1	6.00	5.00	130.00	0.10	152	18.05	5.03	78.95	78.80	76.67
L-C-1	Circular		C-1	C-2	72.51	72.38	1	0.00	3.00	134.53	0.10	17	15.83	2.44	82.30	82.28	78.51
L_L-C-2	Rectangular	2713+84.74	C-2	C-2a	72.38	72.11	1	3.00	3.00	268.46	0.10	29	15.83	3.22	82.28	82.23	78.91
L_L-C-2A	Rectangular		C-2a	C-3	72.11	71.82	1	4.00	3.00	282.71	0.10	59	15.84	4.88	82.23	82.17	79.85
L-C-4A	Circular	2715+00.00	C-3	C-4a	71.37	70.86	1	0.00	4.00	340.00	0.15	65	15.84	5.15	82.17	82.13	80.76
L-C4	Circular		C-4	C-4a	73.14	72.90	1	0.00	2.00	120.00	0.20	15	16.16	4.72	82.14	82.13	80.10
L-MHI-107	Circular	2743+00.00	C-4a	MHI-108	70.86	70.38	1	0.00	4.00	207.00	0.23	74	15.84	5.87	82.13	82.09	80.00
L_L-C-3	Circular	2708+59.50	C-6	C-3	75.16	75.05	1	0.00	2.00	105.93	0.10	8	16.01	3.20	82.18	82.17	80.15
L_L-J-A-5	Circular	2733+47.73	CNT-01	J-A-5	73.34	72.38	1	0.00	4.00	489.00	0.20	130	15.75	10.31	86.15	83.07	81.83
L_L-CNT-02	Circular	2705+49.95	CNT-02	J-B-3	72.19	72.18	1	0.00	4.00	4.00	0.25	131	16.54	10.35	82.55	82.40	80.50
L_L-D-2A	Circular	2712+02.10	D-1	D-2a	70.76	70.49	1	0.00	3.00	273.57	0.10	15	16.26	2.40	79.18	79.16	77.85
L_L-D-2	Circular	2742+78.83	D-2	BNGL02	70.06	69.87	1	0.00	3.00	187.92	0.10	22	15.95	3.04	79.17	79.14	76.19
L_L-BNGL02	Circular	2736+07.66	D-2a	BNGL02	69.99	69.87	1	0.00	3.50	112.13	0.10	35	15.99	3.62	79.16	79.14	76.49
L_L-D-3	Rectangular		D-3	J-D-5	68.96	68.66	1	4.00	4.00	299.00	0.10	97	23.09	6.04	80.27	79.80	78.94
L_L-D-3A	Rectangular	2733+23.85	D-3a	D-3	69.19	68.96	1	4.00	4.00	221.17	0.10	97	23.09	6.04	80.59	80.27	80.05
L_L-D-5	Rectangular	2745+00.00	D-5	D-5A	68.26	67.97	1	4.00	4.00	287.53	0.10	112	21.42	7.02	79.25	78.98	77.98
L_L-D-5A	Rectangular	2713+98.09	D-5A	BNGL03	67.97	67.94	1	4.00	4.00	25.41	0.12	112	21.42	8.97	78.98	78.95	76.54
L_L-D-6	Circular	2753+59.67	D-6	J-D-6a	69.41	69.34	1	0.00	3.50	74.93	0.09	34	16.00	3.49	78.82	78.81	75.91
L_L-D-7	Circular	2756+73.03	D-7	D-6	70.07	69.91	1	0.00	3.00	160.94	0.10	18	16.08	2.56	78.84	78.82	76.47
L_L-A-11B	Circular	2709+00.55	J-A-10	A-11	73.10	72.92	1	0.00	5.00	182.63	0.10	96	16.02	4.87	83.02	82.85	82.83
L_L-J-A-12	Rectangular	2735+39.56	J-A-12	A-13	72.29	71.97	1	8.00	5.00	318.80	0.10	274	15.81	6.82	82.68	82.52	82.73
L_L-J-A-2	Rectangular	2756+19.68	J-A-2	A-3	73.65	73.35	1	6.00	4.00	299.45	0.10	74	16.00	3.06	83.41	83.29	82.38
L_L-A-11	Rectangular	2728+03.54	J-A-5	A-11	72.38	71.81	1	8.00	6.00	282.00	0.20	245	16.04	5.08	83.07	82.85	81.62
L_L-A-9	Circular		J-A-8	A-9	74.34	74.03	1	0.00	4.50	312.00	0.10	48	15.82	3.03	83.82	83.76	82.69
L_L-A-10	Circular		J-A-9	A-10	73.68	73.44	1	0.00	4.50	239.29	0.10	64	15.81	3.99	83.55	83.36	82.77
L_L-J-B-2	Circular	2752+02.47	J-B-2	B-2	73.24	72.85	1	0.00	4.00	393.29	0.10	39	16.26	3.27	82.48	82.42	81.67
L_L-J-B-3	Rectangular	2757+47.22	J-B-3	B-6	72.18	71.91	1	6.00	5.00	279.55	0.10	200	16.17	6.66	82.40	82.18	81.65
L_L-J-D-5	Rectangular	2759+08.16	J-D-5	D-5	68.66	68.26	1	4.00	4.00	403.65	0.10	112	21.41	6.97	79.80	79.25	79.99
L_L-J-D-6A	Circular	2741+63.98	J-D-6a	MH-8	69.34	69.26	1	0.00	3.50	85.37	0.09	34	16.00	3.49	78.81	78.80	76.52
MH10-11	Circular	2735+00.00	MH-10	MH-11	65.79	65.37	1	0.00	5.50	420.00	0.10	159	16.01	6.68	77.85	77.06	77.81
MH10-11	Circular	2738+96.03	MH-10	MH-11	70.33	68.68	1	0.00	3.00	420.00	0.39	32	16.01	4.47	77.85	77.06	77.81
L-MH-11	**Circular**	**2753+12.47**	**MH-11**	**E11504.3**	**65.37**	**65.16**	**1**	**0.00**	**5.50**	**210.00**	**0.10**	**216**	**16.04**	**9.04**	**77.06**	**76.43**	**75.27**
L-MH-11	**Circular**	**2731+96.88**	**MH-11**	**E11504.3**	**68.68**	**68.47**	**1**	**0.00**	**3.00**	**210.00**	**0.10**	**43**	**16.04**	**6.03**	**77.06**	**76.43**	**75.27**
L-MH-8	Circular	2729+00.29	MH-8	MH-9	66.31	66.13	1	0.00	5.50	180.00	0.10	147	18.07	6.13	78.80	78.52	77.12
L-MH-8	Circular	2702+68.87	MH-8	MH-9	71.42	70.94	1	0.00	2.00	49.07	0.98	19	18.06	5.98	78.80	78.52	77.12
MH9-10	Circular	2725+00.00	MH-9	MH-10	66.13	65.79	1	0.00	5.50	340.00	0.10	160	16.01	6.68	78.52	77.85	77.19

Table 11.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (100-Year) - Outfalls 17-19

Model: US290_SegA_BNGLHOL_Mit100-8-31-09.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 17-19																	
MH9-10	Circular	2726+70.85	MH-9	MH-10	70.94	70.33	1	0.00	3.00	340.00	0.18	32	16.01	4.47	78.52	77.85	77.19
L-MHI-108	Rectangular	2730+37.82	MHI-108	MHI-109	70.38	69.55	1	7.00	5.00	600.00	0.14	133	19.70	3.79	82.09	81.91	80.00
Link339	Rectangular	2713+84.74	MHI-108	POND4A	70.38	70.18	1	8.00	4.00	204.00	0.10	446	16.56	13.84	82.09	81.97	80.00
E11504_2	**Rectangular**	**2718+00.00**	**MHI-109**	**E11504.2**	**69.55**	**69.52**	**1**	**7.00**	**5.00**	**30.00**	**0.10**	**144**	**19.95**	**4.08**	**81.91**	**81.92**	**80.80**
Link342	Rectangular		Node386	A102	71.79	71.38	1	8.00	5.00	375.00	0.11	188	16.08	4.69	82.82	82.47	82.19
Link340	Rectangular		POND4A	D-3a	70.18	69.19	1	4.00	3.00	440.00	0.23	97	23.09	8.01	81.97	80.59	82.00
L-POND4B	Rectangular		POND4B	J-D-5	69.21	68.97	1	4.00	4.00	73.00	0.33	-64	15.99	1.71	79.80	79.80	82.00
Link322	Rectangular		POND4D	MHI-108	70.46	70.38	1	8.00	6.00	78.00	0.10	419	16.57	8.70	82.14	82.09	82.50

Table 12.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (100-Year) - Outfalls 20-22

Model: US290_SegA_Sys_BKHSEW43_Mit100-adjust-wat.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 20-22																	
E115-01.1	**Natural**	**2811+67.66**	**BRCKH01.0**	**BRCKH00.1**	**51.24**	**50.96**	**1.00**	**0.00**	**0.00**	**114.20**	**0.25**	**8770**	**19.06**	**11.43**	**69.51**	**68.84**	**70.74**
E115-02	Natural	2810+75.92	BRCKH01.1	BRCKH01.0	51.27	51.24	1.00	0.00	0.00	307.00	0.01	7988	19.05	8.85	**70.74**	69.51	71.00
E115-01.3	Natural		BRCKH01.3	BRCKHO1.2	51.58	51.39	1.00	0.00	0.00	254.70	0.07	6128	19.02	7.07	71.52	71.15	72.20
E115-03.1	Natural		BRCKHO1.2	BRCKH01.1	51.39	51.27	1.00	0.00	0.00	151.00	0.08	7968	18.99	8.41	71.15	70.74	72.80
L_L-COH01	Circular	2799+14.15	COH01	F-2a	62.14	61.80	1.00	0.00	4.00	172.06	0.20	118	19.65	9.35	71.59	70.75	68.02
Link52	Rectangular	2832+53.36	DET-4C	J-H-4a	57.20	57.09	1.00	5.00	5.00	108.66	0.10	186	20.85	7.38	71.03	71.03	72.50
L_L-E-1	Circular	2765+99.87	E-1	E-2	66.87	66.47	1.00	0.00	4.00	400.13	0.10	50	16.61	3.94	75.15	74.68	74.44
L_L-E-10	Rectangular	2786+12.18	E-10	E-11	64.05	63.87	1.00	6.00	4.00	187.82	0.10	188	16.26	7.84	72.75	72.75	71.93
L_L-E-11	**Rectangular**	**2788+00.00**	**E-11**	**E11504.4**	**63.87**	**63.80**	**1.00**	**6.00**	**4.00**	**63.67**	**0.11**	**205**	**16.25**	**8.54**	**72.75**	**72.76**	**71.27**
Link71	Natural		E11504.3	E11504.4	58.48	58.33	1.00	0.00	0.00	200.00	0.07	2216	17.51	6.37	73.02	72.76	75.23
Link77	Natural	2788+44.73	E11504.4	E11504.5	58.33	58.02	1.00	0.00	0.00	600.00	0.05	2161	17.51	6.96	72.76	71.99	75.16
Link75	Natural		E11504.5	E11504.6	58.01	58.02	1.00	0.00	0.00	42.50	-0.02	2115	17.51	6.80	71.99	71.98	75.16
Link74	Natural		E11504.6	E11504.7	58.02	57.34	1.00	0.00	0.00	428.00	0.16	2031	17.84	6.90	71.98	71.73	72.62
Link73	Natural		E11504.7	E11504.8	57.35	57.23	1.00	0.00	0.00	63.75	0.19	1991	17.88	7.01	71.73	71.70	72.61
Link72	Natural		E11504.8	BRCKHO1.2	57.23	55.83	1.00	0.00	0.00	778.00	0.18	1916	18.21	6.94	71.70	71.15	73.29
L_L-E-1a	Circular	2761+99.46	E-1a	E-1	68.27	67.87	1.00	0.00	3.00	400.41	0.10	23	16.26	3.27	75.48	75.15	75.84
L_L-E-2	Rectangular	2770+00.00	E-2	J-E-2	66.47	66.20	1.00	4.00	4.00	272.32	0.10	87	16.51	5.38	74.68	74.08	74.53
L_L-E-3	Rectangular	2776+64.05	E-3	E-4	65.39	65.00	1.00	5.00	4.00	385.95	0.10	116	16.44	5.76	73.21	72.69	72.81
L_L-E-4	Rectangular	2780+50.00	E-4	E-4a	65.00	64.86	1.00	6.00	4.00	139.77	0.10	97	21.56	4.52	72.69	72.64	72.11
Link81	Rectangular	2780+50.00	E-4	E-9	65.00	64.82	1.00	5.00	4.00	325.29	0.06	103	16.52	5.10	72.69	72.72	72.11
L_L-E-4a	Rectangular	2781+89.77	E-4a	E-5	62.09	61.88	1.00	7.00	5.00	210.23	0.10	194	16.65	5.53	72.64	72.40	71.86
L_L-E-5	Rectangular	2784+00.00	E-5	J-E-5	61.88	61.48	1.00	7.00	5.00	399.86	0.10	223	16.20	6.34	72.40	72.10	71.48
L_L-E-6	Circular	2766+67.46	E-6	E-7a	67.00	66.66	1.00	0.00	3.00	344.00	0.10	26	16.26	3.63	73.24	72.73	76.01
L_L-E-7	Circular	2773+53.94	E-7	E-8	65.32	65.02	1.00	0.00	4.00	296.06	0.10	50	16.26	3.95	72.73	72.72	74.09
L_L-E-7a	Circular	2770+11.46	E-7a	E-7	66.16	65.82	1.00	0.00	3.50	342.48	0.10	38	16.26	3.91	72.73	72.73	74.53
L_L-E-8	Rectangular	2776+50.00	E-8	E-9	65.02	64.82	1.00	5.00	4.00	200.00	0.10	71	16.26	3.52	72.72	72.72	72.77
L_L-E-9	Rectangular	2778+50.00	E-9	J-E-9	64.82	64.42	1.00	6.00	4.00	393.82	0.10	178	16.26	7.39	72.72	72.74	72.10
L_L-F-1	Rectangular	2794+00.00	F-1	F-2a	60.88	60.36	1.00	7.00	5.00	517.51	0.10	252	16.15	7.17	71.35	70.75	69.54
L_L-F-1a	Rectangular	2792+16.33	F-1a	F-1	61.06	60.88	1.00	7.00	5.00	183.67	0.10	237	16.14	6.73	71.53	71.35	70.24
L_L-F-2	Rectangular	2800+00.00	F-2	J-F-3	60.28	59.98	1.00	9.00	5.00	300.08	0.10	287	17.16	6.35	70.67	70.37	69.36
L_L-F-2a	Rectangular	2799+17.51	F-2a	F-2	60.36	60.28	1.00	9.00	5.00	82.49	0.10	280	17.16	6.20	70.75	70.67	69.36
Link78	Circular	2799+17.51	F-2a	J-F-5	61.80	61.21	1.00	0.00	4.00	295.00	0.20	126	15.73	10.10	70.75	70.44	69.36
L_L-F-3	Rectangular	2807+00.00	F-3	BRCKH01.0	59.58	59.11	1.00	9.00	5.00	467.66	0.10	297	17.16	6.57	69.98	69.51	69.36
L_L-F-4	Circular	2793+86.99	F-4	F-5	63.99	63.67	1.00	0.00	3.00	313.01	0.10	10	16.26	2.48	70.44	70.44	71.06
L_L-F-5	Circular	2797+00.00	F-5	J-F-5	62.68	62.55	1.00	0.00	4.00	126.23	0.10	37	16.25	3.74	70.44	70.44	69.67
L_L-F-6	Circular	2806+00.00	F-6	J-F-6	62.92	62.52	1.00	0.00	3.50	400.15	0.10	28	16.25	2.90	70.45	70.44	69.42
L_L-G-1	Rectangular	2825+00.00	G-1	G-1a	58.51	58.29	1.00	7.00	5.00	217.95	0.10	169	17.16	4.80	70.30	70.18	69.36
L_L-G-1a	Rectangular	2822+82.05	G-1a	J-G-1a	58.29	57.91	1.00	7.00	5.00	382.65	0.10	177	16.58	5.03	70.18	69.95	69.36
L_L-G-1b	Rectangular	2815+19.46	G-1b	BRCKH01.0	54.11	53.76	1.00	10.00	10.00	351.81	0.10	708	17.16	7.07	69.73	69.51	69.36
L_L-G-2	Rectangular	2827+50.00	G-2	G-1	58.76	58.51	1.00	7.00	5.00	250.34	0.10	164	17.16	4.67	70.45	70.30	69.36
L_L-G-2a	Rectangular	2830+56.00	G-2a	G-2	59.07	58.76	1.00	7.00	5.00	306.00	0.10	157	17.17	4.45	70.62	70.45	69.36
L_L-G-3	Rectangular	2845+64.61	G-3	J-G-3	60.57	60.11	1.00	7.00	5.00	463.93	0.10	176	15.93	5.01	71.38	71.27	69.36
L_L-H-5a	Rectangular	2838+00.00	G-3a	J-H-5	59.81	58.00	1.00	8.00	5.00	280.34	0.65	142	15.93	3.54	71.03	71.03	70.03
Link79	Rectangular	2838+00.00	G-3a	MH-12s	59.81	59.59	1.00	7.00	5.00	220.36	0.10	144	17.19	4.08	71.03	70.95	70.03
L_L-G-4	Rectangular	2849+00.00	G-4	G-3	60.90	60.57	1.00	7.00	5.00	335.39	0.10	155	15.92	4.42	71.54	71.38	69.36
L_L-G-5	Circular	2852+50.00	G-5	G-5a	62.74	62.59	1.00	0.00	3.50	150.48	0.10	-28	21.78	2.26	71.58	71.58	69.36
L_L-G-5a	Circular	2851+00.00	G-5a	G-5b	62.59	62.50	1.00	0.00	3.50	93.16	0.10	-40	21.78	2.61	71.58	71.58	69.36
L_L-G-5b	Rectangular	2850+06.84	G-5b	G-4	61.00	60.90	1.00	7.00	5.00	106.84	0.09	142	15.86	4.04	71.58	71.54	69.36
L_L-H-1	Rectangular	2814+00.00	H-1	G-1b	54.43	54.11	1.00	9.00	9.00	296.32	0.11	526	17.16	6.48	69.92	69.73	69.42
L_L-H-2	Rectangular	2824+00.00	H-2	J-H-2	55.44	55.24	1.00	9.00	8.00	196.75	0.10	517	17.16	7.15	70.78	70.61	69.36
L_L-H-3	Rectangular	2828+50.00	H-3	H-3b	56.71	56.55	1.00	8.00	5.00	162.00	0.10	203	21.06	5.04	71.03	71.03	69.36
L_L-H-3a	Rectangular	2826+30.00	H-3a	H-2	55.67	55.44	1.00	9.00	8.00	230.00	0.10	510	17.17	7.05	70.98	70.78	69.36
L_L-H-3b	Rectangular	2826+88.00	H-3b	H-3a	55.73	55.67	1.00	9.00	8.00	59.41	0.10	510	20.57	7.05	71.03	70.98	69.36
L_L-H-4a	Rectangular	2831+18.34	H-4a	H-3	56.97	56.70	1.00	8.00	5.00	268.30	0.10	198	21.18	4.91	71.03	71.03	69.36
L_L-H-5	Circular	2840+70.00	H-5	J-H-5	59.40	59.01	1.00	0.00	5.00	397.64	0.10	78	15.98	3.94	71.04	71.03	69.36
L_L-H-7	Circular	2845+70.00	H-7	J-H-7	60.89	60.69	1.00	0.00	4.00	202.30	0.10	61	15.97	4.83	71.04	71.04	69.36

Table 12.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (100-Year) - Outfalls 20-22

Model: US290_SegA_Sys_BKHSEW43_Mit100-adjust-wat.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_L-H-8	Circular	2848+00.00	H-8	H-7	61.62	61.39	1.00	0.00	3.50	230.00	0.10	39	15.97	4.03	71.05	71.04	69.36
L_L-H-9	Circular	2852+94.91	H-9	H-8	62.11	61.62	1.00	0.00	3.50	492.91	0.10	9	15.99	0.92	71.05	71.05	69.36
L_LJ-E-2	Rectangular	2772+72.32	J-E-2	E-3	66.20	65.81	1.00	4.00	4.00	391.73	0.10	87	16.51	5.38	74.08	73.21	74.38
L_LJ-E-5	Rectangular	2787+99.86	J-E-5	F-1a	61.48	61.06	1.00	7.00	5.00	416.47	0.10	223	16.20	6.34	72.13	71.53	71.82
L_L-E-515	**Circular**	**2798+26.51**	**JE5150100**	**E5150100**	**56.59**	**56.43**	**1.00**	**0.00**	**4.50**	**82.00**	**0.20**	**180**	**16.15**	**11.54**	**70.05**	**70.00**	**70.39**
L_LJ-E-9	Rectangular	2782+43.83	J-E-9	E-10	64.42	64.05	1.00	6.00	4.00	368.29	0.10	178	16.26	7.40	72.74	72.75	72.77
L_LJ-F-3	Rectangular	2803+00.08	J-F-3	F-3	59.98	59.58	1.00	9.00	5.00	399.92	0.10	287	17.16	6.35	70.37	69.98	69.69
L_LJ-F-5	Circular	2798+26.23	J-F-5	JE5150100	56.65	56.59	1.00	0.00	2.50	31.40	0.20	180	16.16	35.96	70.44	70.05	70.12
L_LJ-F-6	Circular	2801+99.85	J-F-6	J-F-5	62.52	62.12	1.00	0.00	3.50	373.62	0.11	28	16.26	2.90	70.44	70.44	71.42
L_L-JG-1a	Rectangular	2818+99.40	J-G-1a	G-1b	57.91	57.53	1.00	7.00	5.00	379.94	0.10	177	16.58	5.03	69.95	69.73	69.56
L_LJ-G-3	Rectangular	2841+00.59	J-G-3	G-3a	60.11	59.81	1.00	7.00	5.00	300.54	0.10	176	15.93	5.01	71.24	71.03	71.08
L_LJ-G-3a	Rectangular	2834+13.32	J-G-3a	G-2a	59.42	59.07	1.00	7.00	5.00	357.48	0.10	151	17.19	4.28	70.82	70.62	70.75
L_LJ-H-1a	Rectangular	2818+06.46	J-H-1	H-1	54.84	54.43	1.00	9.00	8.00	406.46	0.10	517	17.16	7.15	70.73	69.92	71.46
L_LJ-H-1	Rectangular	2822+03.34	J-H-2	J-H-1	55.24	54.84	1.00	9.00	8.00	396.95	0.10	517	17.16	7.15	70.61	70.74	70.27
L_L-J-H-4A	Rectangular	2832+43.53	J-H-4a	H-4a	57.10	56.97	1.00	8.00	5.00	125.18	0.10	186	20.85	4.61	71.03	71.03	69.98
Link1	Rectangular	2835+19.36	J-H-4b	DET-4C	57.85	57.74	1.00	8.00	5.00	107.58	0.10	219	15.97	5.44	71.03	71.03	71.18
L_LJ-H-5	Rectangular	2836+72.36	J-H-5	J-H-4b	58.00	57.85	1.00	8.00	5.00	152.98	0.10	219	15.97	5.44	71.03	71.03	70.57
L_LJ-H-7	Circular	2843+67.70	J-H-7	H-5	60.19	59.90	1.00	0.00	4.50	297.70	0.10	61	15.97	3.82	71.04	71.04	69.36
L_L-MH-12s	Rectangular	2835+79.64	MH-12s	J-G-3a	59.59	59.42	1.00	7.00	5.00	166.32	0.10	151	17.19	4.28	70.95	70.82	70.87
L_L-MH-14s	Circular	2781+98.83	MH-14s	E-4a	63.39	63.37	1.00	0.00	5.00	27.75	0.09	177	16.98	8.96	72.69	72.64	71.37
L_L-MH-18s	Circular	2851+44.26	MH-18s	G-5b	62.42	61.92	1.00	0.00	4.00	191.11	0.26	122	15.76	9.70	72.66	71.58	68.35
L_L-MH-7s	Circular	2828+96.25	MH-7s	H-3b	56.11	55.73	1.00	0.00	7.00	364.99	0.10	517	16.20	13.33	72.47	71.03	71.63
L_L-W43rd	Circular	2783+29.32	W43rd	MH-14s	63.74	63.39	1.00	0.00	5.00	173.87	0.20	172	17.03	8.70	73.17	72.69	72.57

Table 7.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (10-Year) - Outfalls 1-4

Model: US290_Mit_SegD_SysA_Adj_SS.xp

10/29/2009

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 1-4																	
L-A-2	Rectangular	2123+99.96	A-1	EX-2	132.81	132.77	1.00	4.00	2.00	83.05	0.00	12	15.76	1.89	134.45	134.44	136.81
L-A-2	Trapezoidal	2123+99.96	A-1	EX-2	136.31	136.80	1.00	15.00	0.50	83.05	0.00	0	0.00	0.00	134.45	134.45	136.81
L-A-32	Circular	2132+49.96	A-10	MH-1	131.39	131.16	1.00	0.00	3.00	229.95	0.00	23	15.78	3.55	134.32	134.14	136.42
L-A-32	Trapezoidal	2132+49.96	A-10	MH-1	135.50	137.00	1.00	0.00	0.50	229.95	0.00	0	0.00	0.00	134.32	134.32	136.42
L-A-35	Circular	2136+20.00	A-11	MH-2	132.62	132.44	1.00	0.00	1.50	64.27	0.00	5	15.75	3.76	134.08	134.00	137.07
L-A-36	Circular	2139+20.00	A-12	EX-8	132.24	132.09	1.00	0.00	1.50	53.88	0.00	5	15.75	3.97	133.82	133.75	136.80
L-A-40	Rectangular	2143+99.94	A-13	MH-4	130.05	129.86	1.00	6.00	3.00	151.27	0.00	80	15.83	5.12	133.33	133.25	135.42
L-A-39	Circular	2142+20.00	A-14	MH-3	131.86	131.70	1.00	0.00	1.50	56.75	0.00	6	15.75	4.15	133.52	133.44	136.46
L-A-42	Circular	2145+20.00	A-15	MH-4	131.52	131.36	1.00	0.00	1.50	56.88	0.00	6	15.75	4.21	133.45	133.25	136.16
L-A-43	Circular	2148+20.00	A-16	MH-5	131.13	130.97	1.00	0.00	1.50	56.88	0.00	6	15.89	4.29	133.16	132.97	135.82
L-A-45	Rectangular	2152+99.93	A-17	A-18	127.67	127.02	1.00	6.00	4.00	650.00	0.00	99	15.82	4.80	132.75	132.28	134.37
L-A-46	Rectangular	2159+49.93	A-18	A-19	127.02	126.42	1.00	6.00	4.00	600.00	0.00	97	15.80	4.73	132.28	131.83	134.20
L-A-47	Rectangular	2165+49.93	A-19	A-20	126.42	125.72	1.00	6.00	4.00	700.00	0.00	97	15.92	4.59	131.83	131.04	133.30
L-A-4	Rectangular	2126+99.96	A-2	EX-3	132.66	132.60	1.00	4.00	2.00	86.07	0.00	22	15.77	3.29	134.41	134.37	136.51
L-A-4	Trapezoidal	2126+99.96	A-2	EX-3	136.01	136.27	1.00	22.50	0.50	86.07	0.00	0	0.00	0.00	134.41	134.41	136.51
L-A-48	Rectangular	2172+49.93	A-20	A-27	125.72	124.49	1.00	6.00	4.00	950.00	0.00	104	15.92	4.31	131.04	129.62	132.95
L-A-50	Circular	2160+00.00	A-21	A-22	129.50	128.89	1.00	0.00	2.50	518.74	0.00	11	15.79	2.88	131.35	130.95	134.50
L-A-51	Circular	2165+18.74	A-22	EX-9	128.89	128.51	1.00	0.00	2.50	130.07	0.00	28	16.00	6.93	130.95	130.13	132.50
L-A-14	Rectangular	2170+00.00	A-23	EX-10	128.18	127.94	1.00	6.00	3.00	228.31	0.00	38	16.01	3.72	129.94	129.76	133.00
L-A-16	Rectangular	2177+18.74	A-24	EX-11	127.47	127.33	1.00	6.00	3.00	136.16	0.00	42	16.05	4.01	129.41	129.30	134.30
L-A-18	Rectangular	2180+42.96	A-25	EX-12	127.16	127.06	1.00	6.00	3.00	116.71	0.00	45	16.07	4.77	129.16	129.06	134.31
L-A-20	Rectangular	2183+22.96	A-26	EX-13	125.29	123.00	1.00	6.00	3.00	215.39	0.00	49	16.07	3.14	129.20	129.08	133.64
L-A-49	Rectangular	2181+99.93	A-27	A-28	124.49	123.79	1.00	6.00	4.00	400.68	0.00	113	15.92	4.71	129.62	129.06	132.07
L-A-95	Rectangular	2186+00.59	A-28	MH-13	122.79	122.77	2.00	4.00	4.00	12.00	0.17	153	15.88	4.75	129.06	128.84	131.47
L-A-58	Circular	2186+99.93	A-29	A-28	123.14	123.04	1.00	0.00	4.00	99.42	0.00	39	15.71	4.17	129.10	129.06	131.17
L-A-7	Rectangular	2130+99.96	A-3	EX-5	132.45	132.38	1.00	5.00	2.00	85.76	0.00	28	15.80	3.45	134.30	134.25	136.45
L-A-7	Trapezoidal	2130+99.96	A-3	EX-5	135.95	136.42	1.00	38.00	0.50	150.00	0.00	0	0.00	0.00	134.30	134.30	136.45
L-A-93	Rectangular	2185+67.90	A-30	EX-14	122.85	122.84	2.00	5.00	4.00	10.99	0.00	95	17.64	4.75	129.05	129.06	130.00
L-A-56	Circular	2192+99.90	A-31	MH-8	123.74	123.44	1.00	0.00	4.00	299.52	0.00	35	15.72	3.67	129.26	129.18	130.87
L-A-23	Circular	2192+45.28	A-32	EX-18	124.10	123.85	1.00	0.00	3.50	178.37	0.00	20	16.00	2.03	129.26	129.19	131.75
L-A-27	Circular	2194+46.98	A-33	A-32	124.39	124.10	1.00	0.00	3.50	200.36	0.00	19	16.00	1.96	129.34	129.26	133.55
L-A-54	Circular	2197+99.87	A-34	MH-7	124.23	123.97	1.00	0.00	3.50	263.57	0.00	30	15.70	3.58	129.44	129.34	130.77
L-A-52	Circular	2203+99.84	A-35	MH-6	125.00	124.56	1.00	0.00	2.50	339.95	0.00	14	15.66	3.36	129.70	129.55	129.54
L-A-52	Trapezoidal	2203+99.84	A-35	MH-6	129.04	130.61	1.00	26.00	0.50	339.95	0.00	0	0.00	0.00	129.70	129.55	129.54
L-A-61	Circular	2197+75.87	A-36	A-34	125.27	125.23	1.00	0.00	2.50	40.99	0.00	13	15.75	2.72	129.46	129.44	132.00
L-A-60	Circular	2200+59.70	A-37	A-36	126.06	125.77	1.00	0.00	2.00	287.37	0.00	8	15.75	2.69	129.65	129.46	131.90
L-A-59	Circular	2203+43.32	A-38	A-37	126.85	126.56	1.00	0.00	1.50	287.16	0.00	3	15.70	2.12	130.09	129.65	133.00
L-A-62	Circular	2123+74.32	A-39	A-40	135.50	134.94	1.00	0.00	1.50	190.00	0.00	3	16.05	2.58	138.73	138.63	140.00
L-A-62	Trapezoidal	2123+74.32	A-39	A-40	138.68	138.49	1.00	5.00	0.50	190.00	0.00	0	15.95	0.13	138.73	138.63	140.00
L-A-9	Rectangular	2133+99.95	A-4	EX-6	132.21	132.11	1.00	5.00	2.00	82.87	0.00	31	15.82	4.17	134.15	134.10	136.45
L-A-63	Circular	2125+64.32	A-40	A-41	134.94	134.35	1.00	0.00	1.50	200.20	0.00	6	16.05	3.93	138.63	138.26	140.00
L-A-63	Trapezoidal	2125+64.32	A-40	A-41	138.49	138.00	1.00	5.00	0.50	200.20	0.00	0	15.95	0.46	138.63	138.26	140.00
L-A-64	Circular	2127+64.32	A-41	A-42	133.85	133.28	1.00	0.00	2.00	200.20	0.00	10	15.78	3.86	138.26	137.98	138.50
L-A-65	Circular	2129+64.32	A-42	A-43	133.28	132.39	1.00	0.00	2.00	299.43	0.00	13	15.77	4.60	137.98	137.32	139.62
L-A-66	Circular	2132+63.53	A-43	A-44	131.90	131.35	1.00	0.00	2.50	277.61	0.00	18	15.76	4.33	137.32	136.89	137.50
L-A-67	Circular	2135+40.00	A-44	MH-9	130.85	130.79	1.00	0.00	3.00	45.00	0.00	28	15.76	4.26	136.89	136.82	137.00
L-A-69	Circular	2141+00.00	A-45	A-46	129.96	129.37	1.00	0.00	3.00	400.00	0.00	29	15.85	4.37	135.98	135.16	137.87
L-A-69	Trapezoidal	2141+00.00	A-45	A-46	137.37	135.77	1.00	36.00	0.50	400.00	0.00	0	0.00	0.00	135.16	135.16	137.87
L-A-72	Circular	2145+00.00	A-46	MH-10	128.87	128.71	1.00	0.00	3.50	164.47	0.00	33	15.85	3.67	135.16	134.98	136.27
L-A-72	Trapezoidal	2145+00.00	A-46	MH-10	135.77	136.34	1.00	38.00	0.50	164.47	0.00	0	0.00	0.00	135.16	135.16	136.27
L-A-75	Circular	2150+00.00	A-47	A-48	127.88	127.28	1.00	0.00	4.00	600.00	0.00	61	15.86	4.84	134.44	133.38	135.92
L-A-76	Circular	2156+00.00	A-48	A-52	127.28	126.68	1.00	0.00	4.00	600.00	0.00	65	15.87	5.14	133.38	132.21	135.22
L-A-70	Circular	2143+00.00	A-49	A-50	132.02	130.86	1.00	0.00	1.50	400.00	0.00	6	15.80	3.73	136.62	135.18	137.97
L-A-70	Trapezoidal	2143+00.00	A-49	A-50	135.00	134.50	1.00	0.00	2.00	400.00	0.00	0	15.86	0.11	136.62	135.18	137.97
L-A-11	Rectangular	2137+49.94	A-5	EX-7	130.85	130.75	1.00	5.00	3.00	79.71	0.00	63	15.82	4.77	133.93	133.86	136.07

Table 7.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (10-Year) - Outfalls 1-4

Model: US290_Mit_SegD_SysA_Adj_SS.xp

10/29/2009

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-A-73	Circular	2147+00.00	A-50	MH-10	129.86	129.71	1.00	0.00	2.50	54.00	0.00	25	16.00	5.60	135.18	134.98	137.60
L-A-71	Circular	2151+00.00	A-51	A-50	132.02	130.86	1.00	0.00	1.50	400.00	0.00	7	15.79	3.73	136.65	135.18	137.05
L-A-71	Trapezoidal	2151+00.00	A-51	A-50	135.00	134.50	1.00	0.00	2.00	400.00	0.00	0	15.86	0.11	136.65	135.18	137.05
L-A-78	Circular	2162+00.00	A-52	A-53	126.68	125.79	1.00	0.00	4.00	600.00	0.00	84	15.91	6.64	132.21	130.23	134.52
L-A-80	Circular	2168+00.00	A-53	E-8	125.79	125.17	1.00	0.00	4.00	414.73	0.00	99	15.90	7.72	130.23	129.37	134.52
L-A-82	Rectangular	2177+00.00	A-54	A-59	123.92	123.48	1.00	8.00	5.00	440.58	0.00	-97	16.01	2.27	129.29	129.21	134.17
L-A-88	Circular	2186+00.00	A-55	MH-11	123.70	123.60	1.00	0.00	2.50	68.57	0.00	7	15.67	2.50	129.15	129.15	133.12
L-A-77	Circular	2162+35.58	A-56	A-52	128.23	128.18	1.00	0.00	2.50	35.00	0.00	18	16.03	4.73	132.27	132.21	132.00
L-A-79	Circular	2168+35.58	A-57	A-53	127.86	127.79	1.00	0.00	2.00	35.00	0.00	12	16.00	4.90	130.33	130.23	132.00
L-A-81	Circular	2177+35.58	A-58	A-54	126.00	125.95	1.00	0.00	2.50	35.00	0.00	17	15.93	4.92	129.29	129.29	132.00
L-A-83	Rectangular	2181+40.68	A-59	MH-11	123.48	123.09	1.00	8.00	5.00	390.97	0.00	-94	16.00	2.27	129.21	129.15	134.65
L-A-28	Circular	2124+39.96	A-6	A-7	134.65	134.09	1.00	0.00	1.50	190.06	0.00	3	15.76	2.57	135.59	135.36	138.29
L-A-28	Trapezoidal	2124+39.96	A-6	A-7	137.79	136.98	1.00	0.00	0.50	190.06	0.00	0	0.00	0.00	135.36	135.36	138.29
L-A-90	Rectangular	2185+67.08	A-60	EX-15	123.05	122.95	2.00	5.00	4.00	102.50	0.00	94	17.74	4.68	129.11	129.02	131.00
L-A-86	Circular	2193+50.00	A-61	MH-12	125.69	124.97	1.00	0.00	2.00	363.08	0.00	7	15.60	3.29	129.18	129.16	132.59
L-A-84	Circular	2198+00.00	A-62	A-63	127.50	126.62	1.00	0.00	1.50	300.20	0.00	5	15.76	3.44	129.20	129.19	131.02
L-A-85	Circular	2195+00.00	A-63	A-61	126.62	126.18	1.00	0.00	1.50	150.18	0.00	-5	15.91	3.71	129.19	129.18	132.07
L-A-29	Circular	2126+29.95	A-7	A-8	134.09	133.50	1.00	0.00	1.50	200.07	0.00	6	15.77	3.83	135.36	134.72	139.00
L-A-29	Trapezoidal	2126+29.95	A-7	A-8	136.98	136.00	1.00	5.00	1.00	200.07	0.00	0	0.00	0.00	134.72	134.72	139.00
L-A-30	Circular	2128+29.95	A-8	A-9	133.00	132.61	1.00	0.00	2.00	200.25	0.00	11	15.78	3.79	134.72	134.45	137.50
L-A-30	Trapezoidal	2128+29.95	A-8	A-9	136.00	137.00	1.00	0.00	0.50	200.25	0.00	0	0.00	0.00	134.72	134.72	137.50
L-A-31	Circular	2130+29.95	A-9	A-10	132.11	131.89	1.00	0.00	2.50	218.51	0.00	14	15.79	3.03	134.45	134.32	139.00
L-A-31	Trapezoidal	2130+29.95	A-9	A-10	137.00	135.50	1.00	0.00	0.50	218.51	0.00	0	0.00	0.00	134.32	134.32	139.00
L-B-1	Circular	2203+00.00	B-1	B-2	126.98	126.25	1.00	0.00	1.50	250.02	0.00	2	15.77	2.53	127.66	127.27	130.67
OL-B-1	Trapezoidal	2203+00.00	B-1	B-3	130.17	126.80	1.00	100.00	0.50	200.00	0.00	0	0.00	0.00	125.40	125.40	130.67
L-B-19	Circular	2215+50.00	B-10	MH-17	124.50	123.80	1.00	0.00	2.00	242.88	0.00	14	16.13	4.63	128.08	127.41	127.50
L-B-24	Circular	2212+99.84	B-11	MH-18	123.00	122.95	1.00	0.00	3.00	48.55	0.00	22	16.00	4.70	127.42	127.37	129.91
L-B-26	Circular	2215+49.83	B-12	MH-19	122.85	122.69	1.00	0.00	1.50	57.22	0.00	6	15.75	3.97	127.36	127.26	127.89
L-B-26	Trapezoidal	2215+49.83	B-12	MH-19	127.39	128.47	1.00	100.00	0.50	57.22	0.00	0	0.00	0.00	127.36	127.36	127.89
L-B-28	Circular	2217+63.59	B-13	MH-20	122.31	121.95	1.00	0.00	2.00	114.44	0.00	11	16.00	3.39	127.39	127.14	134.13
L-B-31	Circular	2226+61.23	B-14	MH-22	120.51	120.34	1.00	0.00	2.50	82.38	0.00	18	16.00	3.60	126.43	126.27	131.62
L-B-34	Circular	2237+42.45	B-15	MH-24	119.72	119.52	1.00	0.00	2.00	91.98	0.00	13	16.00	4.01	124.80	124.51	129.77
L-B-36	Circular	2219+23.88	B-16	B-17	122.27	121.98	1.00	0.00	2.00	138.10	0.00	2	15.74	1.65	124.55	124.55	128.27
L-B-37	Circular	2220+61.73	B-17	B-18	121.98	121.71	1.00	0.00	2.00	133.13	0.00	3	15.75	2.35	124.55	124.53	127.72
L-B-38	Circular	2221+94.66	B-18	B-19	121.21	120.94	1.00	0.00	2.50	136.19	0.00	5	15.74	2.21	124.53	124.52	127.19
L-B-39	Circular	2223+30.73	B-19	B-20	120.44	120.32	1.00	0.00	3.00	69.09	0.00	6	15.74	0.85	124.52	124.52	126.64
L-B-2	Circular	2205+50.00	B-2	MH-14	126.25	126.18	1.00	0.00	1.50	25.89	0.00	6	15.77	4.43	127.27	127.09	129.75
L-B-2	Trapezoidal	2205+50.00	B-2	MH-14	129.25	129.30	1.00	26.00	0.50	25.89	0.00	0	0.00	0.00	127.27	127.27	129.75
L-B-40	Circular	2223+99.80	B-20	B-21	120.32	120.11	1.00	0.00	3.00	149.31	0.00	8	15.74	1.25	124.52	124.51	126.36
L-B-41	Circular	2225+49.09	B-21	MH-25	120.11	119.94	1.00	0.00	3.00	107.21	0.00	10	15.74	1.58	124.51	124.50	126.81
L-B-43	Circular	2229+17.92	B-22	B-23	119.06	118.86	1.00	0.00	3.50	132.68	0.00	11	15.74	1.17	124.47	124.46	126.83
L-B-44	Circular	2230+51.50	B-23	B-24	118.86	118.66	1.00	0.00	3.50	124.85	0.00	13	15.74	1.32	124.46	124.45	126.36
L-B-45	Circular	2231+77.36	B-24	B-25	118.16	118.06	1.00	0.00	4.00	94.33	0.00	16	15.74	1.27	124.45	124.44	126.11
L-B-47	Circular	2232+71.79	B-25	B-27	118.06	117.83	1.00	0.00	4.00	234.81	0.00	21	15.74	1.68	124.44	124.41	126.44
L-B-46	Circular	2232+72.57	B-26	B-25	120.85	120.58	1.00	0.00	1.50	44.56	0.00	4	15.86	3.59	124.49	124.44	126.00
L-B-48	Circular	2235+06.59	B-27	MH-26	117.83	117.76	1.00	0.00	4.00	71.21	0.00	24	15.74	1.90	124.41	124.39	126.68
L-B-50	Circular	2237+15.12	B-28	MH-27	117.62	117.40	1.00	0.00	4.00	78.08	0.00	25	15.74	2.00	124.37	124.35	128.80
L-B-55	Circular	2239+99.76	B-29	MH-29	117.53	117.42	1.00	0.00	4.00	108.51	0.00	44	15.76	3.50	124.39	124.31	129.79
L-B-3	Circular	2205+75.55	B-3	MH-14	123.80	123.68	1.00	0.00	2.00	46.11	0.00	16	15.50	5.87	125.40	125.10	127.30
L-B-3	Trapezoidal	2205+75.55	B-3	MH-14	126.80	129.30	1.00	100.00	0.50	46.11	0.00	0	0.00	0.00	125.40	125.40	127.30
L-B-54	Circular	2243+99.75	B-30	B-29	117.93	117.53	1.00	0.00	4.00	399.90	0.00	41	15.76	3.23	124.62	124.39	129.79
L-B-62	Rectangular	2238+57.26	B-31	MH-28	116.90	116.88	2.00	7.00	5.00	45.02	0.04	221	16.00	3.16	124.36	124.34	129.00
L-B-53	Circular	2248+51.07	B-32	B-30	118.38	117.93	1.00	0.00	4.00	451.71	0.10	33	15.76	2.65	124.80	124.62	127.28
L-B-56	Circular	2246+11.81	B-33	MH-30	120.74	119.80	1.00	0.00	2.50	313.78	0.00	3	15.76	1.69	124.51	124.50	129.00
L-B-63	Circular	2237+85.19	B-34	B-31	116.95	116.90	2.00	0.00	4.50	108.22	0.05	135	15.49	8.41	124.68	124.36	129.90
L-B-57	Circular	2242+55.19	B-35	MH-30	119.55	119.30	1.00	0.00	3.00	120.47	0.00	16	16.00	2.22	124.57	124.50	131.02
L-B-52	Circular	2254+89.69	B-36	B-32	119.52	118.88	1.00	0.00	3.50	639.00	0.00	27	16.19	2.79	125.16	124.80	126.11
L-B-5	Rectangular	2208+00.00	B-37	B-38	119.91	119.21	1.00	8.00	5.00	699.93	0.00	-90	16.01	3.47	124.73	124.90	129.58
L-B-6	Rectangular	2215+00.00	B-38	B-39	119.21	118.86	1.00	8.00	5.00	349.63	0.00	-82	16.01	3.18	124.90	124.96	130.15

Table 7.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (10-Year) - Outfalls 1-4

Model: US290_Mit_SegD_SysA_Adj_SS.xp

10/29/2009

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-B-6	Trapezoidal	2215+00.00	B-38	B-39	128.73	127.50	1.00	26.00	0.50	349.63	0.00	0	0.00	0.00	124.96	124.96	130.15
L-B-7	Rectangular	2218+50.00	B-39	B-40	118.86	118.71	1.00	8.00	5.00	149.93	0.00	-72	16.02	2.97	124.96	124.98	128.00
L-B-7	Trapezoidal	2218+50.00	B-39	B-40	127.50	128.03	1.00	26.00	0.50	149.93	0.00	0	0.00	0.00	124.96	124.96	128.00
L-B-22	Circular	2206+49.84	B-4	B-5	124.75	124.62	1.00	0.00	2.50	87.78	0.00	17	16.00	3.57	128.88	128.73	129.39
L-B-22	Trapezoidal	2206+49.84	B-4	B-5	128.89	129.06	1.00	62.00	0.50	87.78	0.00	0	0.00	0.00	128.88	128.88	129.39
L-B-8	Rectangular	2220+00.00	B-40	MH-15	118.71	118.41	1.00	8.00	5.00	299.54	0.00	73	17.62	2.85	124.98	125.02	129.50
L-B-10	Rectangular	2227+00.00	B-41	B-42	118.01	117.81	1.00	8.00	5.00	199.88	0.00	77	17.52	2.42	125.07	125.09	128.18
L-B-10	Trapezoidal	2227+00.00	B-41	B-42	127.68	126.98	1.00	26.00	0.50	199.88	0.00	0	0.00	0.00	125.09	125.09	128.18
L-B-12	Rectangular	2229+00.00	B-42	B-44	117.81	117.26	1.00	8.00	5.00	549.90	0.00	82	17.56	2.37	125.09	125.11	127.48
L-B-11	Circular	2229+00.00	B-43	B-42	122.50	122.36	1.00	0.00	2.00	49.00	0.00	17	16.00	5.50	125.38	125.09	126.50
L-B-13	Rectangular	2234+50.00	B-44	B-45	117.26	117.11	1.00	8.00	5.00	150.00	0.10	84	17.54	2.17	125.11	125.11	127.03
L-B-15	Rectangular	2236+00.00	B-45	MH-16	117.11	117.02	1.00	8.00	5.00	93.01	0.10	87	17.54	2.17	125.11	125.11	126.13
L-B-14	Circular	2236+00.00	B-46	B-45	121.00	120.90	1.00	0.00	2.00	49.00	0.00	11	15.80	3.36	125.21	125.11	125.00
L-B-87	Rectangular	2238+00.00	B-47	MH-16	117.12	117.02	1.00	5.00	5.00	107.15	0.00	120	15.53	4.79	125.22	125.11	126.83
L-B-93	Circular	2253+50.00	B-48	B-57	122.45	122.25	1.00	0.00	1.50	69.59	0.00	3	16.89	2.41	126.14	126.12	147.45
L-B-81	Circular	2250+50.00	B-49	MH-40	123.21	123.00	1.00	0.00	1.50	73.76	0.00	5	15.75	3.17	126.07	126.00	143.53
L-B-23	Circular	2207+37.62	B-5	B-11	124.62	123.50	1.00	0.00	2.50	562.35	0.00	20	16.00	4.14	128.73	127.42	130.50
L-B-92	Circular	2247+50.00	B-50	B-55	122.20	122.00	1.00	0.00	1.50	67.32	0.00	5	15.75	2.70	125.92	125.84	136.52
L-B-91	Circular	2244+52.35	B-51	B-54	123.15	123.00	1.00	0.00	1.50	55.53	0.00	5	15.75	3.13	125.76	125.70	130.55
L-B-90	Circular	2241+50.00	B-52	MH-42	124.38	124.25	1.00	0.00	1.50	48.28	0.00	5	15.76	4.10	125.54	125.48	128.87
L-B-88	Circular	2239+25.37	B-53	MH-41	123.59	123.50	1.00	0.00	1.50	33.83	0.00	4	15.76	3.38	125.32	125.30	128.07
L-B-85	Rectangular	2244+00.40	B-54	MH-42	117.71	117.43	1.00	5.00	5.00	288.08	0.00	107	16.45	4.26	125.70	125.48	126.73
L-B-84	Rectangular	2246+50.00	B-55	B-54	117.96	117.71	1.00	5.00	5.00	249.44	0.00	98	16.51	3.92	125.84	125.70	125.78
L-B-83	Circular	2248+88.78	B-56	B-55	118.19	117.96	1.00	0.00	4.50	238.64	0.00	75	16.68	4.68	125.96	125.84	127.00
L-B-79	Circular	2252+70.00	B-57	MH-39	118.55	118.43	1.00	0.00	4.50	127.53	0.00	69	16.69	4.34	126.12	126.06	125.82
L-B-76	Circular	134+95.99	B-58	MH-37	118.70	118.68	1.00	0.00	4.50	30.20	0.00	67	16.69	4.19	126.20	126.18	127.00
L-B-75	Circular	133+95.00	B-59	B-58	118.80	118.70	1.00	0.00	4.00	101.07	0.00	72	16.87	5.69	126.20	126.20	127.00
L-B-75	Trapezoidal	133+95.00	B-59	B-58	125.04	125.50	1.00	100.00	0.50	101.07	0.00	36	16.53	1.24	126.20	126.20	127.00
L-B-21	Circular	2210+40.78	B-6	MH-18	123.59	122.98	1.00	0.00	1.50	271.53	0.00	5	15.72	3.19	127.71	127.37	131.29
L-B-74	Circular	132+58.23	B-60	B-59	118.93	118.80	1.00	0.00	4.00	136.78	0.00	43	15.55	3.40	126.23	126.20	125.09
L-B-74	Trapezoidal	132+58.23	B-60	B-59	124.59	125.04	1.00	50.00	0.50	136.78	0.00	27	16.64	1.35	126.23	126.20	125.09
L-B-73	Circular	131+55.11	B-61	B-60	119.00	118.93	1.00	0.00	4.00	103.43	0.00	38	16.63	3.01	126.27	126.23	125.71
L-B-72	Circular	129+60.43	B-62	B-61	119.24	119.00	1.00	0.00	3.50	195.84	0.00	33	16.68	3.41	126.43	126.27	125.14
L-B-70	Circular	128+19.55	B-63	MH-36	119.37	119.28	1.00	0.00	3.50	96.25	0.00	31	15.75	3.17	126.49	126.45	126.00
L-B-68	Circular	124+89.71	B-64	MH-35	119.75	119.58	1.00	0.00	3.00	117.70	0.00	22	15.97	3.14	126.60	126.54	125.50
Link749	Trapezoidal	124+89.71	B-64	Node755	0.05	0.00	1.00	0.00	0.05	10.00	0.00	4	16.15	0.00	##########	##########	125.50
L-B-66	Circular	123+16.86	B-65	MH-34	120.51	120.34	1.00	0.00	2.50	173.43	0.00	8	16.89	2.46	126.61	126.60	127.31
L-B-16	Circular	2208+45.57	B-7	B-8	126.81	126.61	1.00	0.00	1.50	200.00	0.00	3	15.76	2.04	127.94	127.78	130.32
L-B-17	Circular	2210+45.57	B-8	B-9	126.61	126.00	1.00	0.00	1.50	200.16	0.00	6	15.78	3.96	127.78	127.48	131.02
L-B-18	Circular	2212+45.57	B-9	MH-17	125.50	125.32	1.00	0.00	2.00	63.80	0.00	10	15.78	4.81	127.48	127.41	128.50
BF63-BF61	Natural		B-F63	Node458	123.30	123.26	1.00	5.00	5.10	40.00	0.10	4	16.93	2.14	126.09	126.09	128.91
BF63-BF65	Circular		B-F63	B-F65	123.30	123.00	3.00	0.00	2.50	90.00	0.33	101	16.02	6.58	126.09	125.50	128.91
BF63-BF65	Trapezoidal		B-F63	B-F65	128.41	128.41	1.00	100.00	0.50	92.00	0.00	0	0.00	0.00	125.50	125.50	128.91
L-C-8	Circular	142+00.00	C-1	MH-45	120.34	120.13	1.00	0.00	3.00	209.71	0.12	20	16.25	2.86	125.29	125.21	125.58
L-C-8	Trapezoidal	142+00.00	C-1	MH-45	125.08	125.50	1.00	36.00	0.50	209.71	0.00	0	0.00	0.00	125.29	125.21	125.58
L-C-5	Circular	157+00.00	C-10	C-12	117.86	117.36	1.00	0.00	3.50	500.01	0.00	30	16.05	4.04	120.64	120.16	124.50
L-C-13	Circular	162+00.27	C-11	C-13	116.36	115.81	1.00	0.00	4.00	553.84	0.00	49	16.12	4.58	120.42	119.80	124.50
L-C-6	Circular	162+00.00	C-12	C-14	116.86	116.20	1.00	0.00	4.00	553.95	0.12	44	16.05	4.41	120.16	119.66	124.50
L-C-14	Circular	167+53.42	C-13	C-14	115.81	115.70	1.00	0.00	4.00	86.00	0.00	60	16.08	6.35	119.80	119.66	125.27
L-C-7	Rectangular	167+53.31	C-14	C-15	114.37	114.27	1.00	6.00	5.00	129.44	0.00	115	16.06	3.88	119.66	119.56	125.27
D31-D33	Rectangular	168+82.59	C-15	D33	114.27	114.07	1.00	6.00	5.00	352.00	0.00	129	16.05	4.29	119.56	119.23	122.43
L-C-1	Circular	142+00.00	C-2	C-1	120.50	120.34	1.00	0.00	2.50	157.92	0.10	13	16.26	2.57	125.34	125.29	125.09
L-C-9	Circular	147+00.00	C-3	C-5	119.00	118.10	1.00	0.00	3.50	500.00	0.18	22	15.98	4.11	121.26	120.95	125.30
L-C-2	Circular	147+00.00	C-4	C-3	119.92	119.50	1.00	0.00	3.00	141.60	0.35	14	16.00	4.37	121.41	121.26	124.50
L-C-10	Circular	152+00.00	C-5	C-7	117.60	117.36	1.00	0.00	4.00	163.00	0.15	30	15.82	3.49	120.95	120.89	124.50
L-C-3	Circular	151+99.80	C-6	C-8	118.90	118.70	1.00	0.00	3.00	163.20	0.12	15	16.00	3.40	120.93	120.82	124.50
L-C-11	Circular	153+63.00	C-7	C-9	117.36	116.96	1.00	0.00	4.00	337.00	0.12	35	15.81	3.84	120.89	120.74	126.50
L-C-4	Circular	153+63.00	C-8	C-10	118.20	117.86	1.00	0.00	3.50	337.00	0.00	22	16.00	3.18	120.82	120.64	126.50
L-C-12	Circular	157+00.00	C-9	C-11	116.96	116.36	1.00	0.00	4.00	500.28	0.00	39	16.13	4.01	120.74	120.42	124.50
L-D-1	Circular	120+03.77	D-1	D-2	122.07	121.87	1.00	0.00	2.50	202.16	0.00	10	15.51	3.12	123.69	123.51	127.40

Table 7.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (10-Year) - Outfalls 1-4

Model: US290_Mit_SegD_SysA_Adj_SS.xp

10/29/2009

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-D-6	Circular	107+10.26	D-10	D-12	119.21	118.98	1.00	0.00	4.00	234.61	0.00	42	15.79	4.41	122.06	121.77	128.37
L-D-13	Circular	107+10.00	D-11	MH-43	114.92	114.91	1.00	0.00	5.50	32.14	0.00	22	16.04	1.11	119.59	119.59	128.65
L-D-7	Circular	104+77.79	D-12	D-14	118.98	118.69	1.00	0.00	4.00	295.25	0.00	47	15.80	5.10	121.77	121.20	128.18
L-D-16	Circular	104+79.77	D-13	D-15	114.33	114.24	1.00	0.00	6.00	292.54	0.00	26	16.11	1.06	119.58	119.57	128.25
L-D-8	Circular	101+84.93	D-14	D-15	118.69	118.60	1.00	0.00	4.00	86.00	0.00	55	15.79	6.77	121.20	120.84	127.94
L-D-17	**Circular**	**101+84.93**	**D-15**	**D-17**	**114.24**	**114.19**	**1.00**	**0.00**	**6.00**	**169.57**	**0.00**	**77**	**15.95**	**2.93**	**119.57**	**119.52**	**127.94**
L-D-18	Circular	100+18.70	D-16	D-17	121.57	121.36	1.00	0.00	2.00	92.51	0.00	2	15.76	2.92	122.21	121.91	127.07
L-D-2	Circular	118+01.62	D-2	D-4	121.87	121.50	1.00	0.00	2.50	297.05	0.13	13	15.80	4.00	123.51	122.72	127.20
L-D-9	Circular	118+01.28	D-3	D-5	118.52	118.22	1.00	0.00	4.00	298.36	0.00	5	16.01	1.66	119.80	119.76	125.60
D32-D31	Circular		D32	C-15	116.63	116.28	1.00	0.00	2.50	71.00	0.00	7	15.99	4.02	119.59	119.56	122.43
D33-D35	Rectangular		D33	D35	114.07	113.90	1.00	6.00	5.00	258.00	0.00	141	16.04	4.71	119.23	118.94	122.71
D34-D33	Circular		D34	D33	117.79	116.59	1.00	0.00	2.00	71.00	0.00	7	16.00	6.66	119.21	119.23	123.04
D35-D37	**Rectangular**		**D35**	**D37**	**112.90**	**112.85**	**1.00**	**6.00**	**6.00**	**107.00**	**0.00**	**151**	**16.04**	**4.18**	**118.94**	**118.85**	**123.57**
D36-D35	Circular		D36	D35	118.77	116.92	1.00	0.00	1.50	71.00	0.00	6	15.76	8.73	119.57	118.94	123.57
D38-D36	Circular		D38	D36	120.50	119.50	1.00	0.00	1.50	73.00	0.00	3	15.75	5.75	121.01	120.01	123.50
L-D-3	Circular	115+04.60	D-4	D-6	120.00	119.66	1.00	0.00	4.00	342.19	0.10	20	15.78	2.44	122.50	122.40	127.00
L-D-10	Circular	115+02.93	D-5	D-7	118.22	117.88	1.00	0.00	4.00	340.52	0.00	10	16.02	2.85	119.76	119.61	126.85
L-D-4	Circular	111+62.95	D-6	D-8	119.66	119.46	1.00	0.00	4.00	204.56	0.00	30	15.79	3.22	122.40	122.27	126.64
L-D-11	Circular	111+62.66	D-7	D-9	115.88	115.52	1.00	0.00	5.00	205.63	0.00	17	16.03	1.53	119.61	119.61	126.77
L-D-5	Circular	109+58.73	D-8	D-10	119.46	119.21	1.00	0.00	4.00	250.39	0.00	36	15.79	3.79	122.27	122.06	126.51
L-D-12	Circular	109+58.93	D-9	D-11	115.52	115.42	1.00	0.00	5.00	247.58	0.00	20	16.04	1.22	119.61	119.59	128.88
L-E-1	Rectangular	100+98.69	E-1	E-7	124.71	124.66	1.00	7.00	4.00	50.00	0.00	79	16.25	3.45	129.41	129.40	132.00
L-E-10	Rectangular		E-10	E-11	120.77	120.65	1.00	8.00	5.00	124.96	0.00	-120	16.01	3.72	124.27	124.36	128.00
L-E100-P	Rectangular		E100-Pond	E-7	124.74	124.66	3.00	7.00	5.00	75.00	0.00	-349	16.03	0.92	129.40	129.40	132.00
L-E-11	Rectangular		E-11	E-12	120.65	120.48	1.00	8.00	5.00	167.88	0.00	-120	16.01	3.69	124.36	124.47	128.00
L-E-12	Rectangular		E-12	E-13	120.48	119.96	1.00	8.00	5.00	519.52	0.10	-120	16.00	3.62	124.47	124.71	130.00
L-E-13	Rectangular		E-13	B-37	119.96	119.91	1.00	8.00	5.00	50.00	0.00	-103	16.01	3.46	124.71	124.73	129.50
L-POND	Rectangular	111+95.97	E131-Pond	E-9	121.18	121.08	1.00	8.00	5.00	90.87	0.00	-120	16.02	3.46	123.54	123.92	128.00
L-E-2	Rectangular	101+10.82	E-2	E-7	124.71	124.66	1.00	7.00	4.00	50.00	0.00	78	16.25	3.89	129.40	129.40	132.00
L-E-3	Circular	112+52.05	E-3	E-6	121.33	121.26	1.00	0.00	4.50	50.00	0.14	45	16.00	5.61	124.40	124.37	128.00
L-E-4	Circular	113+06.59	E-4	E-6	121.33	121.26	1.00	0.00	4.50	50.00	0.14	53	16.00	5.56	124.42	124.37	128.00
L-E-6	Rectangular	112+79.05	E-6	E131-Pond	121.26	121.18	1.00	7.00	5.00	84.00	0.10	98	16.00	5.83	124.37	123.54	128.00
L-E-7	Rectangular	2172+18.93	E-7	E-8	124.66	124.40	1.00	8.00	5.00	260.00	0.00	-212	16.02	2.45	129.40	129.37	132.00
L-E-8	Rectangular	2172+18.71	E-8	A-54	124.40	123.92	1.00	8.00	5.00	477.31	0.00	-115	16.01	2.42	129.37	129.29	135.77
L-E-9	Rectangular		E-9	E-10	121.08	120.77	1.00	8.00	5.00	309.99	0.00	-120	16.02	3.80	123.92	124.27	128.00
L-A-1	Rectangular	2123+38.35	EX-1	A-1	132.84	132.81	1.00	4.00	2.00	61.68	0.00	2	15.77	0.57	134.45	134.45	138.33
L-A-1	Trapezoidal	2123+38.35	EX-1	A-1	136.86	136.31	1.00	15.00	0.50	61.68	0.00	0	0.00	0.00	134.45	134.45	138.33
L-A-15	Rectangular	2172+28.31	EX-10	A-24	127.94	127.47	1.00	6.00	3.00	490.43	0.00	38	16.03	3.59	129.76	129.41	133.20
L-A-17	Rectangular	2178+54.89	EX-11	A-25	127.33	127.16	1.00	6.00	3.00	188.09	0.00	42	16.06	4.02	129.30	129.16	134.26
L-A-19	Rectangular	2181+59.67	EX-12	A-26	127.06	125.29	1.00	6.00	3.00	163.30	0.00	46	16.07	5.86	129.06	129.20	133.75
L-A-21	Rectangular	2185+38.35	EX-13	EX-14	123.00	122.86	1.00	6.00	3.00	34.87	0.00	49	16.07	2.70	129.08	129.06	132.87
L-A-94	Circular	2185+68.27	EX-14	A-28	122.84	122.79	2.00	0.00	4.00	55.03	0.13	99	17.59	7.82	129.06	129.06	132.67
L-A-91	Rectangular	2185+67.08	EX-15	EX-19	122.95	122.86	2.00	5.00	4.00	87.33	0.00	94	17.73	4.69	129.02	129.04	134.40
L-A-26	Circular	2190+64.93	EX-16	EX-18	126.15	125.85	1.00	0.00	2.00	91.05	0.00	8	15.77	3.99	129.25	129.19	135.45
L-A-25	Circular	2195+54.30	EX-17	EX-20	124.69	124.55	1.00	0.00	3.00	91.84	0.00	14	16.00	1.96	129.40	129.36	137.31
L-A-22	Circular	2190+71.12	EX-18	EX-19	123.85	123.15	1.00	0.00	4.00	478.61	0.00	26	16.01	2.03	129.19	129.04	132.58
L-A-92	Rectangular	2185+67.55	EX-19	A-30	122.86	122.85	2.00	5.00	4.00	8.18	0.00	95	17.68	4.73	129.04	129.05	132.87
L-A-3	Rectangular	2124+82.97	EX-2	A-2	132.77	132.66	1.00	4.00	2.00	217.01	0.00	12	15.77	1.83	134.44	134.41	137.67
L-A-24	Circular	2195+55.99	EX-20	A-33	124.55	124.39	1.00	0.00	3.50	105.71	0.00	14	16.01	1.44	129.36	129.34	135.03
L-A-5	Rectangular	2127+85.97	EX-3	EX-4	132.60	132.48	1.00	5.00	2.00	270.90	0.00	22	15.78	2.62	134.37	134.31	137.52
L-A-5	Trapezoidal	2127+85.97	EX-3	EX-4	136.72	136.55	1.00	22.50	0.25	270.90	0.00	0	0.00	0.00	134.31	134.31	137.52
L-A-6	Rectangular	2130+56.87	EX-4	A-3	132.48	132.45	1.00	5.00	2.00	43.11	0.00	22	15.80	2.62	134.31	134.30	137.52
L-A-6	Trapezoidal	2130+56.87	EX-4	A-3	136.55	135.95	1.00	22.50	0.50	43.11	0.00	0	0.00	0.00	134.30	134.30	137.52
L-A-8	Rectangular	2131+85.55	EX-5	A-4	132.38	132.21	1.00	5.00	2.00	215.21	0.00	28	15.81	3.43	134.25	134.15	137.22
L-A-8	Trapezoidal	2131+85.55	EX-5	A-4	136.42	135.95	1.00	38.00	0.50	150.00	0.00	0	0.00	0.00	134.15	134.15	137.22
L-A-10	Rectangular	2134+82.74	EX-6	MH-2	131.11	130.94	1.00	5.00	3.00	173.21	0.00	54	15.82	4.09	134.10	134.00	137.22
L-A-12	Rectangular	2138+29.63	EX-7	EX-8	130.75	130.59	1.00	5.00	3.00	123.37	0.00	63	15.83	4.77	133.86	133.75	137.14
L-A-37	Rectangular	2139+52.95	EX-8	MH-3	130.59	130.20	1.00	5.00	3.00	298.68	0.00	68	15.83	5.14	133.75	133.44	137.14
L-A-13	Rectangular	2166+48.47	EX-9	A-23	128.51	128.18	1.00	6.00	3.00	351.53	0.00	28	16.02	3.00	130.13	129.94	134.00
L-A-33	Circular	2134+82.74	MH-1	EX-6	131.16	131.11	1.00	0.00	3.00	54.14	0.00	23	15.79	3.54	134.14	134.10	137.62
L-A-74	Circular	2146+64.42	MH-10	A-47	128.21	127.88	1.00	0.00	4.00	335.61	0.00	58	15.86	4.59	134.98	134.44	138.00

Table 7.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (10-Year) - Outfalls 1-4

Model: US290_Mit_SegD_SysA_Adj_SS.xp

10/29/2009

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-A-74	Trapezoidal	2146+64.42	MH-10	A-47	136.49	135.42	1.00	38.00	0.50	335.61	0.00	0	0.00	0.00	134.44	134.44	138.00
L-A-89	Rectangular	2185+31.55	MH-11	A-60	123.09	123.05	2.00	5.00	4.00	44.00	0.00	94	17.74	4.67	129.15	129.11	133.36
L-A-87	Circular	2189+87.46	MH-12	A-55	124.97	124.20	1.00	0.00	2.00	387.99	0.00	6	15.67	3.11	129.16	129.15	133.68
E100	**Natural**	**2186+00.59**	**MH-13**	**E100-OUT**	**122.77**	**122.07**	**1.00**	**0.00**	**0.00**	**1206.00**	**0.00**	**162**	**16.05**	**2.40**	**128.84**	**126.28**	**146.49**
L-B-4	Circular	2205+75.55	MH-14	E-13	123.18	122.85	1.00	0.00	2.50	166.46	0.19	20	15.75	5.23	125.10	124.71	131.00
L-B-9	Rectangular	2223+00.00	MH-15	B-41	118.41	118.01	1.00	8.00	5.00	399.21	0.00	74	17.63	2.63	125.02	125.07	129.50
L-B-64	Circular	2236+92.92	MH-16	B-34	117.02	116.95	2.00	0.00	4.50	152.81	0.05	132	15.49	8.27	125.11	124.68	126.37
L-B-20	Circular	2213+09.24	MH-17	MH-18	120.80	120.48	1.00	0.00	4.00	223.24	0.00	23	15.76	2.68	127.41	127.37	130.55
L-B-25	Circular	2213+12.52	MH-18	MH-19	119.98	119.69	1.00	0.00	4.50	198.54	0.00	47	15.84	2.92	127.37	127.26	130.00
L-B-27	Circular	2215+13.89	MH-19	MH-20	119.69	119.44	1.00	0.00	4.50	205.31	0.00	52	15.84	3.26	127.26	127.14	129.10
L-A-34	Rectangular	2136+56.22	MH-2	A-5	130.94	130.85	1.00	5.00	3.00	93.59	0.00	59	15.82	4.42	134.00	133.93	137.22
L-A-34	Trapezoidal	2136+56.22	MH-2	A-5	135.80	135.57	1.00	38.00	0.50	93.59	0.00	0	0.00	0.00	133.93	133.93	137.22
L-B-29	Circular	2217+19.58	MH-20	MH-21	119.44	118.96	1.00	0.00	4.50	384.54	0.00	60	16.01	3.78	127.14	126.78	128.36
L-B-30	Circular	2221+29.13	MH-21	MH-22	118.96	118.34	1.00	0.00	4.50	542.05	0.00	60	16.01	3.78	126.78	126.27	133.76
L-B-32	Circular	2226+58.23	MH-22	MH-23	118.34	117.73	1.00	0.00	4.50	509.68	0.00	78	16.01	4.88	126.27	125.47	133.38
L-B-33	Circular	2231+81.08	MH-23	MH-24	117.73	117.02	1.00	0.00	4.50	605.28	0.00	78	16.01	4.89	125.47	124.51	127.00
L-B-35	Circular	2237+86.60	MH-24	B-31	117.02	116.95	1.00	0.00	4.50	71.00	0.00	91	16.01	5.68	124.51	124.36	129.65
L-B-42	Circular	2226+56.48	MH-25	B-22	119.94	119.56	1.00	0.00	3.00	260.29	0.00	10	15.74	1.40	124.50	124.47	126.85
L-B-49	Circular	2235+77.80	MH-26	B-28	117.76	117.62	1.00	0.00	4.00	137.32	0.00	24	15.74	1.90	124.39	124.37	126.96
L-B-51	Circular	2237+93.19	MH-27	MH-28	117.40	117.27	1.00	0.00	4.00	81.35	0.00	25	15.74	2.00	124.35	124.34	130.21
L-B-61	Rectangular	2238+74.53	MH-28	MH-29	116.88	116.85	2.00	7.00	5.00	43.45	0.07	244	16.00	3.47	124.34	124.31	130.45
L-B-60	Rectangular	2238+91.32	MH-29	MH-32	116.85	116.84	2.00	7.00	5.00	10.62	0.09	283	16.01	4.03	124.31	124.16	130.09
L-A-38	Rectangular	2142+51.63	MH-3	A-13	130.20	130.05	1.00	6.00	3.00	148.36	0.00	73	15.83	4.69	133.44	133.33	137.14
L-A-38	Trapezoidal	2142+51.63	MH-3	A-13	135.36	134.92	1.00	38.00	0.50	148.36	0.00	0	0.00	0.00	133.33	133.33	137.14
L-B-58	Circular	2242+89.73	MH-30	MH-31	118.80	117.88	1.00	0.00	3.50	367.27	0.00	18	16.00	1.91	124.50	124.38	130.85
L-B-59	Circular	2239+20.45	MH-31	B-31	117.88	117.82	1.00	0.00	3.50	64.08	0.00	18	16.00	1.91	124.38	124.36	129.83
E131	**Natural**	**2238+94.89**	**MH-32**	**E131-OUT**	**116.84**	**117.85**	**1.00**	**0.00**	**0.00**	**475.00**	**-0.21**	**280**	**16.02**	**1.37**	**124.16**	**124.06**	**131.92**
L-B-65	Circular	122+51.64	MH-33	B-65	120.62	120.51	1.00	0.00	2.00	162.07	0.11	6	16.90	2.43	126.60	126.61	128.00
L-B-67	Circular	123+98.05	MH-34	B-64	120.34	120.25	1.00	0.00	2.50	91.77	0.00	8	16.90	2.84	126.60	126.60	127.90
L-B-69	Circular	126+07.40	MH-35	B-63	119.58	119.37	1.00	0.00	3.50	212.15	0.00	20	16.00	2.14	126.54	126.49	125.80
L-B-71	Circular	129+15.80	MH-36	B-62	119.28	119.24	1.00	0.00	3.50	44.83	0.00	28	15.71	2.92	126.45	126.43	125.50
L-B-77	Circular	135+26.15	MH-37	MH-38	118.68	118.60	1.00	0.00	4.50	89.68	0.00	67	16.69	4.19	126.18	126.15	127.20
L-B-78	Circular	2253+23.59	MH-38	B-57	118.60	118.55	1.00	0.00	4.50	54.83	0.00	67	16.69	4.19	126.15	126.12	127.00
L-B-80	Circular	2251+42.33	MH-39	MH-40	118.43	118.28	1.00	0.00	4.50	158.15	0.00	71	16.70	4.43	126.06	126.00	127.00
L-A-41	Rectangular	2145+51.15	MH-4	MH-5	129.86	129.47	1.00	6.00	3.00	300.00	0.00	84	15.83	5.47	133.25	132.97	136.79
L-B-82	Circular	2249+83.35	MH-40	B-56	118.28	118.19	1.00	0.00	4.50	95.34	0.00	72	16.69	4.48	126.00	125.96	127.50
L-B-86	Rectangular	2238+89.55	MH-41	B-47	117.21	117.12	1.00	5.00	5.00	89.64	0.00	109	16.39	4.36	125.30	125.22	127.06
L-B-89	Rectangular	2241+11.95	MH-42	MH-41	117.43	117.21	1.00	5.00	5.00	222.23	0.00	108	16.40	4.32	125.48	125.30	127.75
L-D-14	Circular	106+77.66	MH-43	MH-44	111.73	111.73	1.00	0.00	4.50	45.65	0.00	23	16.04	1.41	119.59	119.59	128.63
L-D-15	Circular	106+31.71	MH-44	D-13	114.89	114.83	1.00	0.00	5.50	150.88	0.00	23	16.08	1.14	119.59	119.58	128.54
L-B-94	Circular	139+90.34	MH-45	B-36	120.13	120.02	1.00	0.00	3.00	104.07	0.12	19	16.25	2.68	125.21	125.16	126.50
L-A-44	Rectangular	2148+51.15	MH-5	A-17	129.47	128.67	1.00	6.00	3.00	448.74	0.00	88	15.83	5.93	132.97	132.75	136.79
L-A-53	Circular	2200+59.37	MH-6	A-34	124.56	124.23	1.00	0.00	2.50	259.13	0.00	14	15.66	3.34	129.55	129.44	131.79
L-A-55	Circular	2195+35.93	MH-7	A-31	123.97	123.74	1.00	0.00	3.50	235.72	0.00	30	15.70	3.49	129.34	129.26	131.50
L-A-57	Circular	2189+99.92	MH-8	A-29	123.44	123.14	1.00	0.00	4.00	299.67	0.00	35	15.71	3.63	129.18	129.10	131.99
L-A-68	Circular	2135+40.00	MH-9	A-45	130.79	129.96	1.00	0.00	3.00	559.96	0.00	26	15.86	4.11	136.82	135.98	139.66
Link445	Circular		Node458	MH-33	0.05	0.00	1.00	0.00	0.05	10.00	0.00	4	15.43	8.67	126.09	126.60	128.91
Link445	Circular		Node458	MH-33	0.05	0.00	1.00	0.00	0.05	10.00	0.00	4	15.43	8.67	126.09	126.60	128.91

Table 8.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (10-Year) - Outfalls 5-6

Model: 10YR_US290_Mit_SegD_SysA_Adj_SS.xp

9/8/2009

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 5																	
L_A-1	Circular	133+98.14	A-1	MH-A1	120.76	120.56	1.00	0.00	2.00	136.03	0.15	5	15.76	3.17	121.82	121.54	126.50
L_A-10	Rectangular	2276+83.33	A-10	A-12	115.30	114.98	1.00	5.00	4.00	216.70	0.15	86	15.84	5.05	118.98	118.79	123.86
L_A-10	Trapezoidal	2276+83.33	A-10	A-12	123.36	122.61	1.00	38.00	0.50	216.70	0.35	0	0.00	0.00	118.79	118.79	123.86
L_A-11	Rectangular	2278+74.79	A-11	A-13	116.44	115.65	1.00	5.00	3.00	524.58	0.15	65	15.83	5.33	118.92	118.13	124.44
L_A-11	Trapezoidal	2278+74.79	A-11	A-13	123.44	123.40	1.00	38.00	0.50	524.58	0.01	0	0.00	0.00	118.13	118.13	124.44
L_A-12	Rectangular	2279+00.00	A-12	MH-A3	114.98	114.50	1.00	5.00	4.00	319.11	0.15	93	15.83	6.96	118.79	118.43	123.11
L_A-13	Rectangular	2284+00.00	A-13	MH-A4	115.65	115.25	1.00	6.00	3.00	266.91	0.15	86	15.85	7.30	118.13	117.69	124.44
L_A-14	Circular	2289+00.00	A-14	MH-A5	116.12	115.55	1.00	0.00	2.50	379.56	0.15	14	15.93	5.09	118.20	117.83	123.68
L_A-15	Rectangular	2288+00.00	A-15	MH-A4	113.76	113.57	1.00	5.00	3.00	128.88	0.15	63	0.00	7.40	117.86	117.69	124.44
L_A-16	Circular	2292+50.00	A-16	A-14	117.14	116.62	1.00	0.00	2.00	349.97	0.15	11	16.01	5.04	118.97	118.20	122.34
L_A-16	Trapezoidal	2292+50.00	A-16	A-14	121.84	123.18	1.00	38.00	0.50	349.97	-0.38	0	0.00	0.00	118.97	118.97	122.34
L_A-17	Rectangular	2292+00.00	A-17	A-15	114.36	113.76	1.00	5.00	3.00	399.59	0.15	49	0.00	4.16	118.16	117.86	123.39
L_A-17	Trapezoidal	2292+00.00	A-17	A-15	122.89	123.94	1.00	38.00	0.50	399.59	-0.26	0	0.00	0.00	118.16	118.16	123.39
L_A-18	Rectangular	2296+49.68	A-18	A-17	115.04	114.36	1.00	4.00	3.00	449.68	0.15	36	0.00	3.73	118.40	118.16	121.81
L_A-18	Trapezoidal	2296+49.68	A-18	A-17	121.31	122.89	1.00	38.00	0.50	449.68	-0.35	0	0.00	0.00	118.40	118.40	121.81
L_A-19	Circular	2298+99.64	A-19	A-18	115.41	115.04	1.00	0.00	3.00	249.96	0.15	17	0.00	3.28	118.47	118.40	120.94
L_A-19	Trapezoidal	2298+99.64	A-19	A-18	120.44	121.31	1.00	38.00	0.50	249.96	-0.35	0	0.00	0.00	118.47	118.47	120.94
L_A-2	Rectangular	2256+01.79	A-2	A-4	119.43	118.83	1.00	4.00	3.00	403.17	0.15	19	15.83	2.75	121.12	120.96	126.46
L_A-21	Rectangular	131+82.58	A-21	MH-A10	113.33	113.23	1.00	5.00	5.00	100.00	0.10	111	16.00	9.87	117.87	117.86	125.50
L_A-22	Circular	132+80.91	A-22	MH-A10	114.33	114.23	1.00	0.00	4.00	100.00	0.10	50	0.00	3.66	117.86	117.86	125.50
L_A-23	Rectangular	122+26.28	A-23	MH-A7	122.60	122.16	1.00	8.00	4.00	262.00	0.17	25	19.41	1.41	125.03	125.04	129.80
L_A-24	Rectangular	121+93.38	A-24	MH-A8	122.59	122.17	1.00	8.00	4.00	322.00	0.13	22	16.06	1.59	124.86	124.83	128.50
L_A-24A	Trapezoidal	2205+87.24	A-24A	A-24	127.66	122.59	1.00	2.00	4.00	3453.00	0.15	12	16.51	1.30	129.04	124.86	132.00
L_A-24B	Trapezoidal	2156+18.61	A-24B	A-24A	132.98	127.66	1.00	2.00	2.00	5321.09	0.10	5	16.14	0.80	134.04	129.04	137.14
L_A-3	Circular	2260+00.00	A-3	A-5	119.75	119.00	1.00	0.00	2.50	500.14	0.15	11	16.01	3.14	121.29	120.84	125.58
L_A-3	Trapezoidal	2260+00.00	A-3	A-5	125.08	124.59	1.00	38.00	0.50	500.14	0.10	0	0.00	0.00	120.84	120.84	125.58
L_A-4	Rectangular	2260+00.00	A-4	A-6	118.83	118.04	1.00	5.00	3.00	525.73	0.15	49	15.78	4.47	120.96	120.35	125.41
L_A-5	Circular	2265+00.00	A-5	A-7	118.50	117.90	1.00	0.00	3.00	399.69	0.15	25	0.00	6.73	120.84	120.21	125.09
L_A-5	Trapezoidal	2265+00.00	A-5	A-7	124.59	123.99	1.00	38.00	0.50	399.69	0.15	0	0.00	0.00	120.21	120.21	125.09
L_A-6	Rectangular	2265+25.73	A-6	A-8	118.04	117.33	1.00	5.00	3.00	474.27	0.15	60	15.80	6.50	120.35	119.48	126.05
L_A-6	Trapezoidal	2265+25.73	A-6	A-8	125.55	123.66	1.00	38.00	0.50	474.27	0.40	0	0.00	0.00	119.48	119.48	126.05
L_A-7	Rectangular	2268+99.69	A-7	A-9	117.90	117.00	1.00	4.00	3.00	600.31	0.15	43	15.81	4.59	120.21	119.34	124.49
L_A-8	Rectangular	2270+00.00	A-8	A-10	116.33	115.30	1.00	5.00	4.00	683.35	0.15	78	15.83	4.91	119.48	118.98	124.16
L_A-9	Rectangular	2275+00.00	A-9	A-11	117.00	116.44	1.00	5.00	3.00	374.79	0.15	54	15.82	4.52	119.34	118.92	124.50
L_A-9	Trapezoidal	2275+00.00	A-9	A-11	123.50	123.44	1.00	38.00	0.50	374.79	0.02	0	0.00	0.00	118.92	118.92	124.50
L_BF-63	Circular	122+33.90	BF-63	MH-A6	123.30	123.00	3.00	0.00	3.00	90.25	0.33	22	23.92	1.72	125.19	125.16	129.70
L_E112-OUT	**Trapezoidal**		**E112-00**	**E112-OUT**	**110.46**	**110.28**	**1.00**	**10.00**	**9.00**	**150.00**	**0.12**	**298**	**16.04**	**2.60**	**115.19**	**115.01**	**120.00**
L_E112-01	Rectangular		E112-01	E112-00	112.30	110.46	1.00	10.00	5.00	1536.00	0.12	298	16.03	6.11	117.50	115.19	123.00
L_MH-A1	Circular	135+34.00	MH-A1	A-2	120.56	120.43	1.00	0.00	2.00	82.25	0.15	5	15.77	4.00	121.54	121.23	126.50
L_MH-A10	Rectangular	132+41.85	MH-A10	MH-A9	113.23	112.95	1.00	9.00	5.00	230.25	0.12	149	0.00	5.03	117.86	117.83	125.50
L_MH-A3	Rectangular	2282+19.11	MH-A3	MH-A5	113.50	113.05	1.00	7.00	5.00	301.78	0.15	230	16.09	7.24	118.43	117.83	124.00
L_MH-A4	Rectangular	2285+97.62	MH-A4	E112-01	112.42	112.30	1.00	9.00	5.00	101.43	0.12	299	16.02	13.41	117.69	117.50	123.94
L_MH-A5	Rectangular	2285+20.66	MH-A5	MH-A4	112.78	112.42	1.00	9.00	5.00	294.40	0.12	242	16.84	5.66	117.83	117.69	125.13
L_MH-A6	Trapezoidal	121+63.75	MH-A6	A-23	123.00	122.60	1.00	2.00	4.00	217.00	0.18	25	19.18	1.91	125.16	125.03	129.31
L_MH-A6A	Trapezoidal	2206+27.66	MH-A6A	MH-A6	128.69	123.00	1.00	2.00	3.00	3195.00	0.18	23	16.67	1.69	130.46	125.16	132.50
L_MH-A6B	Trapezoidal	2156+34.38	MH-A6B	MH-A6A	134.00	128.69	1.00	2.00	2.00	5306.00	0.10	12	16.28	1.10	135.52	130.46	137.00
L_MH-A7	Trapezoidal	123+64.14	MH-A7	MH-A7A	122.16	121.99	1.00	2.00	4.00	173.00	0.10	25	19.56	1.28	125.04	125.01	129.40
L_MH-A7A	Rectangular		MH-A7A	MH-A7B	121.99	121.90	1.00	3.00	2.00	95.00	0.09	25	19.61	4.23	125.01	124.48	128.50
L_MH-A7B	Trapezoidal		MH-A7B	MH-A3	121.90	119.76	1.00	2.00	4.00	2762.85	0.08	25	20.28	1.56	124.48	120.82	128.50
L_MH-A8	Trapezoidal	123+06.59	MH-A8	MH-A9	122.17	121.70	1.00	2.00	4.00	3213.97	0.01	19	17.24	1.12	124.83	122.61	128.50
L_MH-A9	Rectangular	134+52.75	MH-A9	MH-A5	112.95	112.78	1.00	9.00	5.00	146.73	0.12	149	0.00	12.29	117.83	117.83	125.70
L_POND	Rectangular		POND	MH-A10	113.32	113.23	1.00	9.00	5.00	74.21	0.12	-263	16.01	2.91	117.86	117.86	122.00

Table 8.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (10-Year) - Outfalls 5-6

Model: 10YR_US290_Mit_SegD_SysA_Adj_SS.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 6																	
L-A-2A	Trapezoidal		A-1A	A-2A	118.66	118.30	1.00	2.00	3.00	100.00	0.36	2	15.52	1.11	119.20	118.86	125.00
L-A-1A	Trapezoidal		A-1AA	A-1A	119.50	118.66	1.00	2.00	3.00	590.00	0.14	0	0.00	0.00	119.50	119.20	125.00
L-A-5A	Trapezoidal		A-2A	A-5A	118.30	116.90	1.00	2.00	3.00	452.00	0.31	2	15.58	0.89	118.86	118.13	125.00
L-A-8A	Trapezoidal		A-5A	A-8A	116.90	116.70	1.00	2.00	3.00	597.00	0.03	5	15.80	0.85	118.13	117.85	125.00
L-B-10A	Trapezoidal		A-8A	B-10A	116.70	115.70	1.00	2.00	3.00	805.00	0.12	5	16.21	0.60	117.85	117.80	125.00
L_AN-0	Circular		AN-0	B-31	108.15	107.40	1.00	0.00	3.00	749.82	0.10	16	15.91	2.78	111.63	111.24	114.15
L_AS-0	Circular		AS-0	B-32	108.45	107.68	1.00	0.00	3.00	515.00	0.15	26	15.80	3.64	113.17	112.42	114.46
L_AS-1	Circular		AS-1	AS-0	109.71	108.95	1.00	0.00	2.50	505.00	0.15	9	15.80	2.46	113.58	113.17	115.68
L_B-1	Circular	2304+72.37	B-1	B-3	110.50	110.08	1.00	0.00	3.00	427.21	0.10	19	0.00	5.84	113.34	113.19	118.15
L_B-10	Rectangular	2315+50.00	B-10	B-12	112.30	111.70	1.00	4.00	3.00	400.18	0.15	46	15.73	4.34	118.84	118.37	119.57
L_B-10-OF	Trapezoidal	2315+50.00	B-10	A-8A	119.07	116.70	1.00	50.00	0.50	15.00	15.80	0	0.00	0.00	118.84	117.85	119.57
L-B-11A	Trapezoidal		B-10A	B-11A	115.70	115.62	1.00	2.00	3.00	698.00	0.01	16	16.12	1.23	117.80	117.01	125.00
L_B-11	Rectangular	2324+00.00	B-11	B-13	107.58	107.38	1.00	5.00	4.00	199.62	0.10	59	0.00	6.36	112.23	112.13	117.00
L_B-11	Trapezoidal	2324+00.00	B-11	B-13	116.50	115.90	1.00	38.00	0.50	199.62	0.30	0	0.00	0.00	112.13	112.13	117.00
L-B-13A	Trapezoidal		B-11A	B-13A	115.62	114.70	1.00	2.00	3.00	301.00	0.31	15	16.15	1.55	117.01	116.41	125.00
L_B-12	Rectangular	2319+50.00	B-12	B-14	111.70	111.18	1.00	4.00	3.00	350.21	0.15	47	16.26	4.22	118.37	118.03	118.87
L_B-12-OF	Trapezoidal	2319+50.00	B-12	B-10A	118.37	115.70	1.00	50.00	0.50	15.00	17.80	23	15.98	2.00	118.37	117.80	118.87
L_B-13	Rectangular	2325+99.62	B-13	B-15	107.38	106.88	1.00	5.00	4.00	500.14	0.10	70	0.00	3.84	112.13	111.75	116.40
L-B-14A	Trapezoidal		B-13A	B-14A	114.70	114.34	1.00	2.00	3.00	301.00	0.12	14	16.20	1.14	116.41	116.16	125.00
L_B-14	Rectangular	2323+00.00	B-14	B-16	111.18	110.58	1.00	4.00	3.00	399.87	0.15	49	16.25	4.08	118.03	117.56	118.08
L-B-16A	Trapezoidal		B-14A	B-16A	114.34	113.93	1.00	2.00	3.00	520.00	0.08	15	16.28	1.11	116.16	115.73	125.00
L_B-15	Rectangular	2330+99.62	B-15	B-17	106.88	106.68	1.00	5.00	4.00	200.00	0.10	77	16.00	8.17	111.75	111.55	115.26
L_B-16	Rectangular	2327+00.00	B-16	B-18	110.58	110.13	1.00	4.00	3.00	300.01	0.15	58	15.89	4.81	117.56	116.96	118.53
L_B-16-OF	Trapezoidal	2327+00.00	B-16	B-11A	118.03	115.62	1.00	50.00	0.50	15.00	16.07	0	0.00	0.00	117.56	117.01	118.53
L-B-18A	Trapezoidal		B-16A	B-18A	113.93	113.12	1.00	2.00	3.00	653.00	0.12	16	16.38	1.55	115.73	114.27	125.00
L_B-17	Rectangular	2332+99.62	B-17	B-19	106.68	106.33	1.00	6.00	4.00	350.58	0.10	80	16.00	7.43	111.55	111.32	115.26
L_B-18	Rectangular	2330+00.00	B-18	B-20	110.13	109.63	1.00	4.00	3.00	330.00	0.15	63	15.94	5.24	116.96	116.14	118.23
L_B-18-OF	Trapezoidal	2330+00.00	B-18	B-13A	117.73	114.70	1.00	50.00	0.50	15.00	20.20	0	0.00	0.00	116.96	116.41	118.23
L-E13504	Trapezoidal		B-18A	E135-04	113.12	108.90	1.00	2.00	3.00	440.00	0.96	17	16.42	2.59	114.27	111.01	125.00
L_B-19	Rectangular	2336+50.00	B-19	B-21	106.33	106.18	1.00	6.00	4.00	149.62	0.10	81	0.00	7.95	111.32	111.22	115.09
L_B-19	Trapezoidal	2336+50.00	B-19	B-21	114.59	113.55	1.00	38.00	0.50	149.62	0.70	0	0.00	0.00	111.22	111.22	115.09
L_B-2-OF	Trapezoidal	2302+00.00	B-2	A-1A	122.17	118.66	1.00	50.00	0.50	15.00	23.40	0	0.00	0.00	120.03	119.20	122.67
L_B-2	Circular	2302+00.00	B-2	B-4	114.83	114.23	1.00	0.00	2.50	400.00	0.15	17	15.79	4.96	120.03	119.82	122.67
L_B-2	Trapezoidal	2302+00.00	B-2	B-4	121.67	120.27	1.00	38.00	0.50	400.00	0.35	0	0.00	0.00	119.82	119.82	122.67
L_B-20	Rectangular	2333+30.00	B-20	B-22	109.63	109.30	1.00	4.00	3.00	220.00	0.15	66	15.73	5.55	116.14	115.54	117.78
L_B-20-OF	Trapezoidal	2333+30.00	B-20	B-14A	117.28	114.34	1.00	50.00	0.50	15.00	19.60	0	0.00	0.00	116.14	116.16	117.78
L_B-21	Rectangular	2337+99.62	B-21	B-23	106.18	105.58	1.00	8.00	5.00	600.12	0.10	99	16.00	3.95	111.22	111.06	114.05
L_B-22	Rectangular	2335+50.00	B-22	B-24	109.30	108.85	1.00	4.00	3.00	300.00	0.15	68	16.05	7.28	115.54	114.65	116.57
L_B-23	Rectangular	2343+99.62	B-23	B-25	105.58	105.28	1.00	8.00	5.00	299.33	0.10	112	16.00	4.68	111.06	110.97	112.90
L_B-24	Rectangular	2338+50.00	B-24	B-26	108.85	108.40	1.00	5.00	3.00	300.00	0.15	85	16.02	5.64	114.65	113.94	116.35
L_B-25	Rectangular	2346+98.97	B-25	MH-B1	105.28	105.00	1.00	8.00	5.00	276.78	0.10	121	16.00	7.47	110.97	110.89	113.27
L_B-26	Rectangular	2341+50.00	B-26	B-27	108.40	107.91	1.00	5.00	3.00	330.00	0.15	92	16.02	6.09	113.94	113.15	116.12
L_B-27	Rectangular	2344+80.00	B-27	B-28	107.91	107.47	1.00	5.00	3.00	290.00	0.15	99	16.00	6.55	113.15	111.79	115.49
L_B-28	Rectangular	2347+70.00	B-28	MH-B2	107.47	107.18	1.00	5.00	3.00	195.94	0.15	106	16.00	7.25	111.79	111.01	114.94
L_B-29	Rectangular	2352+45.87	B-29	MH-B1	105.85	105.58	1.00	4.00	4.00	270.06	0.10	45	16.00	6.46	111.02	110.89	113.43
L_B-3	Circular	2308+99.63	B-3	B-5	109.58	109.28	1.00	0.00	3.50	299.97	0.10	30	0.00	6.49	113.19	113.04	116.99
L_B-30	Circular	2351+56.35	B-30	MH-B2	106.47	106.18	1.00	0.00	3.50	190.41	0.15	47	15.79	5.15	111.29	111.01	114.87
L_B-31	Circular	2357+99.73	B-31	B-29	106.40	105.85	1.00	0.00	4.00	553.81	0.10	29	16.00	2.77	111.24	111.02	113.70
L_B-32	Circular	2356+30.00	B-32	B-30	107.68	106.97	1.00	0.00	3.00	473.65	0.15	33	15.79	4.72	112.42	111.29	116.22
L_B-33	Rectangular	158+51.77	B-33	MH-B3	108.96	108.65	1.00	5.00	5.00	310.01	0.10	136	16.27	10.05	112.70	111.70	116.97
L_B-34	Rectangular	160+53.02	B-34	MH-B3	109.60	109.40	1.00	5.00	4.00	197.72	0.10	105	16.02	7.73	112.57	111.79	117.27
L_B-4-OF	Trapezoidal	2306+00.00	B-4	A-5A	121.27	116.90	1.00	50.00	0.50	15.00	29.13	0	0.00	0.00	119.82	118.13	121.77
L_B-4	Circular	2306+00.00	B-4	B-6	113.73	113.35	1.00	0.00	3.00	250.00	0.15	20	16.29	3.05	119.82	119.67	121.77
L_B-4	Trapezoidal	2306+00.00	B-4	B-6	120.27	119.40	1.00	38.00	0.50	250.00	0.35	0	0.00	0.00	119.82	119.67	121.77
L_B-5	Circular	2311+99.62	B-5	B-7	108.78	108.38	1.00	0.00	4.00	400.00	0.10	41	0.00	7.07	113.04	112.84	116.62
L_B-6	Circular	2308+50.00	B-6	B-8	113.35	112.83	1.00	0.00	3.00	349.98	0.15	29	15.75	6.58	119.67	119.25	120.40
L_B-6-OF	Trapezoidal	2308+50.00	B-6	A-5A	119.90	116.90	1.00	50.00	0.50	15.00	20.00	0	0.00	0.00	119.67	118.13	120.40
L_B-7	Rectangular	2315+99.62	B-7	B-9	108.38	108.00	1.00	4.00	4.00	380.00	0.10	54	0.00	3.74	112.84	112.56	116.38
L_B-8	Rectangular	2312+00.00	B-8	B-10	112.83	112.30	1.00	3.00	3.00	349.90	0.15	35	15.74	6.51	119.25	118.84	120.12
L_B-8-OF	Trapezoidal	2312+00.00	B-8	A-8A	119.62	116.70	1.00	50.00	0.50	15.00	19.47	0	0.00	0.00	119.25	117.85	120.12

Table 8.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (10-Year) - Outfalls 5-6

Model: 10YR_US290_Mit_SegD_SysA_Adj_SS.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_B-9	Rectangular	2319+79.62	B-9	B-11	108.00	107.58	1.00	4.00	4.00	420.55	0.10	57	0.00	3.80	112.56	112.23	116.40
L-E13504.1	Trapezoidal		D-2A	E135-04	113.05	108.59	1.00	2.00	3.00	160.00	2.79	3	15.68	2.52	113.43	111.01	125.00
L-D-2A	Trapezoidal		D-3A	D-2A	113.22	113.05	1.00	2.00	3.00	200.00	0.09	1	15.54	0.49	113.62	113.43	125.00
L-D-3A	Trapezoidal		D-4A	D-3A	113.70	113.22	1.00	2.00	3.00	145.00	0.33	1	15.50	0.60	113.98	113.62	125.00
E135.2	Natural		E135-03	MH-B1	104.48	104.14	1.00	0.00	0.00	61.00	0.56	514	19.08	3.55	110.90	110.89	116.70
E135.4A	Natural		E135-04	MH-B2	105.50	105.42	1.00	0.00	0.00	20.00	0.40	515	18.96	3.54	111.01	111.01	119.00
E135.4	Natural		E135-05	E135-04	105.79	105.50	1.00	0.00	0.00	74.00	0.39	512	18.98	3.55	111.04	111.01	119.00
E135.6	Natural		E135-06	MH-B3	106.38	106.24	1.00	0.00	0.00	87.00	0.17	465	19.51	2.60	111.76	111.70	117.00
E135.7	Natural		E135-07	E135-06	106.72	106.38	1.00	0.00	0.00	198.00	0.17	587	17.25	3.25	111.94	111.76	117.00
E135.8	Natural		E135-08	E135-07	106.80	106.72	1.00	0.00	0.00	50.00	0.17	602	17.01	3.33	112.01	111.94	117.00
E535.2	Circular		E535-02	E135-07	107.00	106.72	1.00	0.00	2.00	103.00	0.28	-17	16.01	3.27	110.93	111.94	117.00
E535.2	Circular		E535-02	E135-07	0.05	0.00	1.00	0.00	0.05	10.00	0.50	0	0.00	0.00	##########	##########	117.00
E535.2	Circular		E535-02	E135-07	0.05	0.00	1.00	0.00	0.05	10.00	0.50	0	0.00	0.00	##########	##########	117.00
E535.3	Circular		E535-03	E135-06	107.00	106.38	1.00	0.00	2.00	145.00	0.43	-15	16.40	4.15	111.76	111.76	117.00
E535.3	Circular		E535-03	E135-06	0.05	0.00	1.00	0.00	0.05	10.00	0.50	-294	16.79	0.00	##########	##########	117.00
E535.3	Circular		E535-03	E135-06	0.05	0.00	1.00	0.00	0.05	10.00	0.50	-294	16.79	0.00	##########	##########	117.00
E135.1	**Natural**	**2349+75.74**	**MH-B1**	**E135-01**	**104.14**	**103.73**	**1.00**	**0.00**	**0.00**	**87.60**	**0.47**	**560**	**16.07**	**4.14**	**110.89**	**110.86**	**118.83**
E135.3	Natural	2349+65.94	MH-B2	E135-03	105.42	104.48	1.00	0.00	10.83	235.00	0.40	515	19.08	3.47	**111.01**	110.90	117.61
E135.5	Rectangular	159+70.70	MH-B3	E135-05	106.24	105.79	2.00	8.00	8.00	270.00	0.17	512	18.98	6.11	111.70	111.04	117.19
Link985	Rectangular		ML-01	B-34	110.04	109.60	1.00	4.00	4.00	444.22	0.10	80	16.51	6.29	113.57	112.57	117.27

Table 9.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (10-Year) - Outfalls 7-8

Model: E127MIT_10.XP & BW8MIT_10.XP **11/4/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 7																	
Link590	**Natural**		**6863.30**	**6325.00**	**98.45**	**97.83**	**1**	**0.00**	**0.00**	**538.30**	**0.12**	**667.46**	**16.78**	**3.33**	**106.11**	**105.23**	**112.53**
Link588	Natural		7185.00	7185(ml)	98.45	98.45	1	0.00	0.00	70.00	0.00	580.46	17.01	1.73	106.24	106.21	112.53
Link655	Natural		7216.80	7185.00	99.44	98.45	1	0.00	0.00	31.80	3.11	560.51	17.00	5.42	106.29	106.24	112.53
Link587	Natural		7253.30	7216.80	99.47	99.44	1	0.00	0.00	36.50	0.08	560.37	17.00	5.72	106.55	106.29	112.56
Link665	Natural		7185(ml)	6863.30	98.45	98.45	1	0.00	0.00	251.70	0.00	599.08	16.99	1.79	106.21	106.11	112.53
L_AN4	Rectangular	2370+99.66	AN-1	AN-2	103.88	103.18	1	4.00	4.00	696.00	0.10	31.06	15.99	2.70	107.24	107.10	113.00
L_AN5	Rectangular	2377+99.72	AN-2	AN-J3	103.18	102.93	1	6.00	4.00	250.28	0.10	60.22	15.97	3.36	107.10	107.02	111.94
L_AN7	Rectangular	2382+99.82	AN-3	AN-J4	102.68	102.38	1	7.00	4.00	300.16	0.10	90.33	16.06	3.64	106.93	106.77	111.64
L_AN9	Rectangular	2388+99.84	AN-4	AN-5	102.08	101.68	1	7.00	4.00	399.57	0.10	115.90	16.05	4.14	106.62	106.31	111.04
L_AN10	Rectangular	2392+99.41	AN-5	AN-J5	101.68	101.43	1	6.00	5.00	250.60	0.10	126.37	16.05	5.06	106.31	106.18	110.36
L_AN12	Rectangular	2398+00.00	AN-6	AN-J6	101.18	100.83	1	8.00	5.00	350.00	0.10	135.36	16.04	4.06	106.16	106.14	109.38
L_AN15	Rectangular	2406+60.52	AN-7	6863.30	100.32	100.00	1	8.00	5.00	318.92	0.10	152.20	16.05	4.07	106.12	106.11	108.55
L_AN6	Rectangular	2380+50.00	AN-J3	AN-3	102.93	102.68	1	6.00	4.00	249.82	0.10	59.21	16.08	3.00	107.02	106.93	112.39
L_AN8	Rectangular	2386+00.00	AN-J4	AN-4	102.38	102.08	1	7.00	4.00	299.84	0.10	90.32	16.06	3.34	106.77	106.62	111.94
L_AN11	Rectangular	2395+62.68	AN-J5	AN-6	101.43	101.18	1	6.00	5.00	251.30	0.10	124.72	16.04	4.99	106.18	106.16	110.36
L_AN13	Rectangular	2401+50.00	AN-J6	AN-J7	100.83	100.55	1	8.00	5.00	274.89	0.10	132.37	16.06	3.79	106.14	106.13	109.96
L_AN14	Rectangular	2404+25.00	AN-J7	AN-7	100.55	100.32	1	8.00	5.00	235.39	0.10	130.44	16.07	3.57	106.13	106.12	109.18
L-RD-1	Trapezoidal		A-R1	RD-2	105.44	104.30	1	2.00	4.00	1144.00	0.10	7.67	15.61	1.08	106.68	106.32	109.50
L_AS5	Rectangular	2371+00.00	AS-2	AS-J3	103.81	103.41	1	4.00	4.00	400.00	0.10	13.52	15.82	2.25	106.37	106.35	114.63
L_AS7	Rectangular	2379+00.00	AS-3	AS-J4	103.01	102.66	1	4.00	4.00	350.00	0.10	27.51	15.83	2.86	106.34	106.30	113.53
L_AS9	Rectangular	2386+00.00	AS-4	AS-J5	102.31	102.01	1	5.00	4.00	305.00	0.10	40.36	15.82	2.85	106.25	106.23	112.73
L_AS11	Rectangular	2392+10.00	AS-5	AS-J6	101.70	101.48	1	5.00	4.00	220.00	0.10	50.57	15.80	3.17	106.23	106.22	111.97
L_AS13	Rectangular	2396+50.00	AS-6	AS-J7	101.26	100.94	1	6.00	4.00	325.00	0.10	59.89	16.03	2.71	106.22	106.22	111.65
L_AS15	Rectangular	2403+00.00	AS-7	AS-8	100.61	100.23	1	6.00	4.00	380.00	0.10	74.51	16.00	3.10	106.22	106.22	110.00
L_AS16	Rectangular	2406+80.00	AS-8	7185(ml)	100.23	100.00	1	6.00	4.00	230.51	0.10	83.81	16.00	3.49	106.22	106.21	110.00
L_AS6	Rectangular	2375+00.00	AS-J3	AS-3	103.41	103.01	1	4.00	4.00	400.00	0.10	12.23	15.84	1.39	106.35	106.34	115.13
L_AS8	Rectangular	2382+50.00	AS-J4	AS-4	102.66	102.31	1	4.00	4.00	350.00	0.10	25.78	15.83	2.43	106.30	106.25	113.78
L_AS10	Rectangular	2389+05.00	AS-J5	AS-5	102.01	101.70	1	5.00	4.00	305.00	0.10	38.23	15.81	2.48	106.23	106.23	113.01
L_AS12	Rectangular	2394+30.00	AS-J6	AS-6	101.48	101.26	1	5.00	4.00	220.00	0.10	50.08	16.05	2.90	106.22	106.22	112.75
L_AS14	Rectangular	2399+75.00	AS-J7	AS-7	100.94	100.61	1	6.00	4.00	325.00	0.10	59.88	16.03	2.49	106.22	106.22	111.62
L_BN14	Rectangular	2413+41.07	BN-1	6863.30	99.36	99.00	1	4.00	4.00	361.52	0.10	96.23	16.00	6.00	106.22	106.11	107.82
L_BN2	Rectangular	2419+50.35	BN-2	BN-J1	99.97	99.64	1	8.00	4.00	335.35	0.10	67.71	16.01	2.11	106.29	106.25	107.52
L_BN4	Rectangular	2424+00.34	BN-3	BN-J2	100.42	100.20	1	7.00	4.00	225.33	0.10	29.23	16.02	1.04	106.31	106.30	106.17
L_BN1	Rectangular	2416+15.00	BN-J1	BN-1	99.64	99.36	1	8.00	4.00	273.86	0.10	67.68	16.01	2.11	106.25	106.22	108.52
L_BN3	Rectangular	2421+75.00	BN-J2	BN-2	100.20	99.97	1	7.00	4.00	224.65	0.10	29.24	16.02	1.04	106.30	106.29	107.51
Link653	Circular		BR-1	RD-9	103.38	102.29	1	0.00	2.00	1087.00	0.10	5.77	15.52	2.55	106.86	106.56	109.50
L_BS11	Circular	2412+00.00	BS-1	7185(ml)	100.29	100.00	1	0.00	4.00	289.49	0.10	39.76	15.78	3.12	106.22	106.21	109.19
L_BS2	Circular	2417+50.00	BS-2	BS-J1	100.84	100.56	1	0.00	3.50	275.00	0.10	27.56	15.77	2.80	106.23	106.22	108.90
L_BS4	Circular	2423+00.00	BS-3	BS-J2	101.39	101.11	1	0.00	3.00	275.00	0.10	14.28	15.76	1.98	106.24	106.23	108.45
L_BS1	Circular	2414+75.00	BS-J1	BS-1	100.56	100.29	1	0.00	3.50	275.00	0.10	27.43	15.77	2.81	106.22	106.22	109.45
L_BS3	Circular	2420+25.00	BS-J2	BS-2	101.11	100.84	1	0.00	3.00	275.00	0.10	14.29	15.77	2.02	106.23	106.23	109.27
L-RD-2	Trapezoidal		RD-2	RD-3	104.30	103.79	1	2.00	4.00	508.00	0.10	7.62	15.82	1.06	106.32	106.30	109.50
L-RD-3	Circular		RD-3	RD-4	103.79	103.73	1	0.00	2.50	60.00	0.10	7.78	17.19	3.10	106.30	106.28	109.50
L-RD-4	Trapezoidal		RD-4	RD-5	103.73	103.12	1	2.00	4.00	613.00	0.10	8.68	17.21	1.08	106.28	106.27	109.50
L-RD-5	Trapezoidal		RD-5	RD-6	103.12	101.89	1	2.00	4.00	1225.00	0.10	-12.76	16.22	1.07	106.27	106.26	109.50
L-RD-6	Trapezoidal		RD-6	RD-7	101.89	100.84	1	2.00	4.00	1054.00	0.10	-32.34	16.16	0.76	106.26	106.25	109.50
L-RD-7	Trapezoidal		RD-7	7185	100.84	100.33	1	2.00	4.00	510.00	0.10	-50.70	16.10	0.58	106.25	106.24	109.50
Link649	Circular		RD-8	7185.00	100.94	100.30	1	0.00	4.00	636.00	0.10	5.49	15.90	0.89	106.26	106.24	109.50
Link652	Circular		RD-9	RD-8	102.29	100.94	1	0.00	2.00	1352.00	0.10	5.65	15.89	2.19	106.56	106.26	109.50
Outfalls 8																	
L_BN5	Circular	2428+00.33	BN-4	BN-J3	95.56	95.31	1	0.00	3.00	249.67	0.10	9.33	16.06	2.61	99.28	99.28	106.17
L_BN7	Circular	2433+00.33	BN-5	BN-J4	95.06	94.66	1	0.00	4.00	399.64	0.10	18.26	16.53	2.75	99.28	99.28	106.47
L_BN9	Rectangular	2441+00.32	BN-6	BN-J5	94.26	93.96	1	5.00	4.00	299.68	0.10	34.09	16.41	2.36	99.28	99.28	106.22
L_BN11	Rectangular	2447+00.32	BN-7	BN-J6	93.66	93.26	1	8.00	5.00	399.68	0.10	126.32	23.65	4.78	99.28	99.28	106.22

Table 9.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (10-Year) - Outfalls 7-8

Model: E127MIT_10.XP & BW8MIT_10.XP **11/4/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_BN13	Rectangular	2455+00.00	BN-8	CN-1	92.86	92.54	1	8.00	5.00	323.44	0.10	130.75	16.78	4.73	99.30	99.34	105.56
L_BN6	Circular	2430+50.00	BN-J3	BN-5	95.31	95.06	1	0.00	3.00	250.33	0.10	8.85	16.04	2.27	99.28	99.28	106.91
L_BN8	Circular	2437+00.00	BN-J4	BN-6	94.66	94.26	1	0.00	4.00	400.32	0.10	18.49	16.52	2.17	99.28	99.28	107.61
L_BN10	Rectangular	2444+00.00	BN-J5	BN-7	93.96	93.66	1	5.00	4.00	300.32	0.10	34.27	16.41	2.20	99.28	99.28	107.41
L_BN12	Rectangular	2451+00.00	BN-J6	BN-8	93.26	92.86	1	8.00	5.00	400.00	0.10	127.64	23.81	4.74	99.28	99.30	107.61
Link615	Rectangular		B-R2	BS-J4	94.25	94.21	1	8.00	5.00	40.30	0.00	-81.44	19.51	3.32	99.29	99.29	108.97
L_BS5	Circular	2428+00.00	BS-4	BS-J3	95.73	95.48	1	0.00	3.00	250.00	0.10	15.48	15.76	3.06	99.30	99.29	108.15
L_BS7	Circular	2433+00.00	BS-5	BS-6	95.23	94.83	1	0.00	3.50	400.00	0.10	25.84	15.82	4.82	99.29	99.29	108.45
L_BS8	Circular	2437+00.00	BS-6	BS-7	94.83	94.43	1	0.00	4.00	399.93	0.10	26.69	16.03	4.14	99.29	99.29	108.45
L_BS9	Circular	2441+00.00	BS-7	BS-J4	94.43	94.21	1	0.00	4.00	224.99	0.10	24.63	16.18	2.91	99.29	99.29	108.45
L_BS12	Rectangular	2445+50.00	BS-8	BN-7	93.98	93.66	1	8.00	5.00	319.53	0.10	98.48	23.67	3.96	99.28	99.28	108.30
L_BS6	Circular	2430+50.00	BS-J3	BS-5	95.48	95.23	1	0.00	3.00	250.00	0.10	15.46	15.82	2.89	99.29	99.29	108.90
L_BS10	Rectangular	2443+25.00	BS-J4	BS-8	94.21	93.98	1	8.00	5.00	225.00	0.10	91.84	23.56	3.88	99.29	99.28	108.97
Link618	Circular	211+57.61	BW8DET	CN-J13	87.75	87.61	1	0.00	3.00	130.00	0.00	142.25	16.25	19.79	100.18	100.17	102.50
L_OS4	Circular	2504+92.58	BW8-SE	CS-8	89.41	89.13	1	0.00	6.00	271.60	0.10	75.49	16.00	2.67	100.18	100.18	102.08
L_OS3	Rectangular	2499+06.76	BW8-SW	POND-6A	91.20	91.00	1	7.00	3.00	125.00	0.10	56.86	16.00	6.71	99.87	99.87	102.66
L_CN1	Rectangular	2458+23.49	CN-1	CN-J1	92.54	92.10	1	8.00	5.00	438.38	0.10	146.96	16.70	5.03	99.34	99.40	100.36
L_CN3	Rectangular	2467+00.30	CN-2	CN-J2	91.66	91.26	1	9.00	5.00	399.70	0.10	174.58	16.50	4.69	99.47	99.52	104.67
L_CN6	Rectangular	2477+80.30	CN-3	CN-4	90.58	90.26	1	9.00	6.00	320.22	0.10	275.45	16.20	5.93	99.63	99.86	101.82
L_CN7	Rectangular	2481+00.00	CN-4	CN-J4	90.26	89.86	1	9.00	6.00	400.00	0.10	300.93	16.18	6.33	99.86	99.72	101.42
L_CN10	Rectangular	2493+00.00	CN-5	CN-J6	89.06	88.71	1	9.00	6.00	349.96	0.10	369.50	16.13	7.73	99.82	99.87	101.47
L_CN12	Rectangular	2499+00.00	CN-6	CN-J7	88.46	88.16	1	10.00	6.00	299.99	0.10	433.66	16.13	8.86	99.90	99.93	101.32
L_CN14	Rectangular	2505+00.00	CN-7	CN-J8	87.86	87.73	2	7.00	6.00	137.61	0.10	474.86	16.39	7.37	99.99	100.03	100.87
L_CN22	Circular	2514+00.00	CN-8	CN-J15	90.00	89.70	1	0.00	4.50	245.69	0.10	25.07	16.00	2.63	100.18	100.18	100.27
L_CN2	Rectangular	2462+62.00	CN-J1	CN-2	92.10	91.66	1	8.00	5.00	438.18	0.10	148.21	16.69	4.92	99.40	99.47	104.34
L_CN17	Rectangular	2507+95.01	CN-J10	CN-J11	87.43	87.24	2	7.00	6.00	184.54	0.10	475.14	16.40	8.46	100.11	100.16	102.34
L_CN23	**Rectangular**	**2509+23.24**	**CN-J11**	**E135-01**	**87.24**	**87.19**	**2**	**8.00**	**8.00**	**60.06**	**0.10**	**630.68**	**16.36**	**10.53**	**100.16**	**100.17**	**101.94**
L_CN18	Rectangular	2510+49.51	CN-J12	CN-J11	87.41	87.24	1	9.00	6.00	165.16	0.10	162.43	16.16	5.96	100.17	100.16	101.49
L_CN19	Rectangular	2511+02.56	CN-J13	CN-J12	87.61	87.41	1	9.00	6.00	200.04	0.10	162.57	16.14	5.52	100.17	100.17	101.31
Link617	Rectangular	2511+54.31	CN-J15	BW8DET	88.20	88.00	1	6.00	6.00	130.00	0.00	195.40	15.91	5.80	100.18	100.18	101.13
L_CN4	Rectangular	2471+00.00	CN-J2	CN-J3	91.26	90.86	1	9.00	5.00	400.00	0.10	177.04	16.50	4.57	99.52	99.58	105.22
L_CN5	Rectangular	2475+00.00	CN-J3	CN-3	90.86	90.58	1	9.00	5.00	280.29	0.10	179.27	16.51	4.49	99.58	99.63	103.22
L_CN8	Rectangular	2485+00.00	CN-J4	CN-J5	89.86	89.46	1	9.00	6.00	399.93	0.10	301.52	16.19	6.32	99.72	99.77	103.42
L_CN9	Rectangular	2489+00.00	CN-J5	CN-5	89.46	89.06	1	9.00	6.00	400.00	0.10	302.27	16.20	6.31	99.77	99.82	102.87
L_CN11	Rectangular	2496+50.00	CN-J6	CN-6	88.71	88.46	1	9.00	6.00	249.97	0.10	369.47	16.14	7.99	99.87	99.90	102.32
L_CN13	Rectangular	2502+00.00	CN-J7	CN-7	88.16	87.86	2	7.00	6.00	300.00	0.10	446.96	16.40	6.74	99.93	99.99	102.37
L_CN15	Rectangular	2506+02.80	CN-J8	CN-J9	87.73	87.58	2	7.00	6.00	150.00	0.10	474.93	16.40	7.60	100.03	100.06	101.38
L_CN16	Rectangular	2506+95.66	CN-J9	CN-J10	87.58	87.43	2	7.00	6.00	150.00	0.10	475.02	16.40	7.93	100.06	100.11	101.85
L_CS1	Circular	2463+00.00	CS-1	CS-J1	95.44	95.19	1	0.00	3.00	249.96	0.10	23.79	16.01	4.23	100.48	99.63	105.83
L_CS3	Circular	2468+00.00	CS-2	CS-3	93.94	93.64	1	0.00	4.00	299.95	0.10	-41.72	17.24	3.55	99.63	99.63	105.56
L_CS4	Circular	2471+00.00	CS-3	CS-J2	93.64	93.29	1	0.00	4.00	349.98	0.10	56.88	16.01	5.02	99.63	99.99	106.61
L_CS6	Rectangular	2478+00.00	CS-4	CN-3	92.94	92.58	1	6.00	4.00	361.73	0.10	132.96	17.29	6.85	100.44	99.63	103.46
L_CS7	Circular	2481+00.00	CS-5	CS-J3	93.85	93.45	1	0.00	3.00	399.99	0.10	21.96	16.01	3.45	99.87	99.87	103.16
L_CS10	Circular	2491+00.00	CS-6	CS-J5	91.85	91.45	1	0.00	4.00	400.00	0.10	64.97	16.01	5.68	99.87	99.87	101.76
L_CS13	Rectangular	2500+00.00	CS-7	CN-J7	90.69	90.16	1	8.00	4.00	524.02	0.10	-232.78	17.56	7.76	99.86	99.93	100.71
L_CS14	Circular	2507+00.00	CS-8	CS-J7	89.13	88.73	1	0.00	6.00	399.95	0.10	112.93	15.91	4.17	100.18	100.18	100.81
L_CS15	Circular	2514+00.00	CS-9	CS-J7	91.53	91.23	1	0.00	3.50	299.94	0.10	40.49	15.75	5.73	100.18	100.18	100.46
L_CS2	Circular	2465+50.00	CS-J1	CS-2	94.69	94.44	1	0.00	3.50	250.00	0.10	-33.41	17.25	2.76	99.63	99.63	106.81
L_CS5	Circular	2474+50.00	CS-J2	CS-4	93.29	92.94	1	0.00	4.00	349.89	0.10	56.42	16.03	5.43	99.99	100.44	105.03
L_CS8	Circular	2485+00.00	CS-J3	CS-J4	93.45	93.15	1	0.00	3.00	299.92	0.10	21.76	16.03	3.35	99.87	99.87	103.86
L_CS9	Circular	2488+00.00	CS-J4	CS-6	93.15	92.85	1	0.00	3.00	300.00	0.10	22.06	16.04	3.49	99.87	99.87	102.81
L_CS11	Circular	2495+00.00	CS-J5	CS-J6	91.45	91.15	1	0.00	4.00	300.00	0.10	64.87	16.03	6.82	99.87	99.87	102.46
Link616	Circular	2498+00.00	CS-J6	POND-6A	91.15	91.00	1	0.00	4.00	70.00	0.00	64.84	16.03	12.04	99.87	99.87	101.41
L_CS16	Circular	2511+00.00	CS-J7	CN-J15	88.73	88.20	1	0.00	6.00	535.43	0.10	147.08	15.91	6.06	100.18	100.18	101.51
BS-ML	Circular		ML-03	POND-7B	95.21	94.60	1	0.00	5.00	819.64	0.00	56.55	16.04	6.30	99.30	99.30	109.04
L_BS14	Rectangular	2441+61.51	ML-04	B-R2	94.39	94.25	1	8.00	5.00	132.33	0.10	-81.46	19.52	3.29	99.29	99.29	108.97
L_OS2	Circular	2478+70.48	ML-05	CS-4	93.45	92.94	1	0.00	3.50	508.23	0.10	30.30	16.01	3.65	102.99	100.44	106.46
L_CS12	Rectangular		POND-6A	CS-7	91.00	90.69	1	8.00	4.00	120.00	0.10	-235.81	17.56	7.08	99.87	99.86	102.50
L_BS13	Rectangular	2445+42.58	POND-7B	ML-04	94.60	94.39	1	8.00	5.00	200.00	0.10	-81.31	19.52	3.41	99.30	99.29	108.30
L_OS1	Circular	2480+89.48	SNT01	CS-4	93.24	92.94	1	0.00	4.00	297.79	0.10	111.87	17.20	0.00	##########	##########	104.71

Table 9.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (10-Year) - Outfalls 7-8

Model: E127MIT_10.XP & BW8MIT_10.XP

11/4/2009

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_OS1	Circular	2480+89.48	SNT01	CS-4	93.24	92.94	1	0.00	4.00	297.79	0.10	111.87	17.20	0.00	############	############	104.71

Table 9.1-A

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (10-Year) - Outfalls 8A and 8B

Model: BW8South_Mit_10-R3.xp

2/27/2012

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 8A-8B																
L-POND6F	Rectangular	BW-J3	L-21	95.69	95.41	1	6.00	4.00	56.65	0.49	154	16.46	6.49	100.79	100.66	103.18
L_L-C7	Rectangular	CI-C7	BW-J3	99.00	98.66	1	4.00	2.00	74.18	0.50	12	15.97	4.54	100.79	100.79	103.40
L_L-SD2	Rectangular	SD-1A	SD-2	100.00	98.97	1	7.00	3.00	208.00	1.00	70	15.88	5.70	102.49	101.76	106.30
L_L-SD2	Trapezoidal	SD-1A	SD-2	100.00	97.51	1	0.00	6.30	206.38	1.21	72	15.81	3.27	101.76	101.69	106.30
L_L-SD1	Natural	SD-1	SD-1A	100.42	100.00	1	4.00	0.00	379.57	0.11	70	15.78	2.25	102.76	101.76	105.12
L_L-A12	Rectangular	CI-A12	SD-1	100.53	100.42	1	4.00	2.00	89.19	0.14	22	15.76	2.72	102.85	102.76	105.11
L_L-B12	Rectangular	CI-B12	SD-1	100.51	100.42	1	4.00	2.00	88.58	0.10	49	15.76	6.09	103.19	102.76	104.88
L_L-A10	Rectangular	DI-A10	CI-A12	100.84	100.53	1	4.00	2.00	312.29	0.10	11	15.75	1.32	102.92	102.85	104.00
L_L-OFFB12	Rectangular	OFF-B12	CI-B12	100.53	100.51	1	4.00	2.00	24.70	0.08	44	15.76	5.53	103.29	103.19	104.88
L_L-B10	Rectangular	DI-B10	CI-B12	100.70	100.52	1	4.00	2.00	305.74	0.06	3	15.50	1.17	103.20	103.19	104.00
Link57	Circular	BW-C4	POND6F	97.99	97.80	1	0.00	2.00	38.00	0.50	5	15.75	2.62	101.44	101.43	103.30
Link65	Rectangular	BW-C3	BW-J1	97.43	97.30	1	4.00	3.00	127.00	0.16	45	15.79	3.86	101.68	101.59	103.82
Link56	Circular	BW-C5	POND6H	97.99	97.68	1	0.00	2.00	96.00	0.32	2	15.90	1.99	101.41	101.41	104.12
L-B1	Rectangular	B-1	SD-3	98.53	98.50	1	3.00	2.00	25.00	0.12	18	15.76	4.85	101.64	101.63	102.90
L_L-C2	Rectangular	BW-C1	BW-C3	97.66	97.43	1	3.00	3.00	231.00	0.17	33	15.79	3.81	101.88	101.68	105.04
L_L-D4	Rectangular	BW-D4	POND6H	98.49	97.26	1	3.00	2.00	110.00	1.12	24	15.75	4.13	101.52	101.41	102.12
L-POND	Rectangular	BW-D3	POND6H	97.26	97.16	1	4.00	3.00	97.00	0.09	53	16.00	4.43	101.53	101.41	102.86
L_L-D2	Rectangular	BW-D1	BW-D3	98.40	97.26	1	3.00	3.00	396.00	0.11	34	16.00	3.97	101.88	101.53	104.41
L_L-B9	Circular	A-1	CI-B9	99.88	99.41	1	4.00	2.00	67.00	0.70	2	15.76	2.74	101.44	101.44	104.19
L-SD2	Rectangular	SD-2	SD-3	97.51	97.36	1	7.00	3.00	140.00	0.11	69	15.82	3.71	101.69	101.63	106.00
Link55	Rectangular	BW-J1	POND6H	97.30	97.15	1	7.00	3.00	151.00	0.10	131	15.82	7.17	101.59	101.41	103.31
L-CIB9	Rectangular	CI-B9	POND6F	99.41	99.09	1	4.00	2.00	182.00	0.18	8	15.76	2.89	101.44	101.43	102.47
Link48	Circular	B-1A	B-1	98.68	98.53	1	3.00	2.00	16.00	0.94	8	15.76	4.40	101.64	101.64	102.90
Link58	Rectangular	POND6H	BW-J3	96.39	96.24	1	6.00	4.00	149.22	0.00	149	16.51	6.20	101.41	100.79	103.50
L_L-G3	Circular	CI-G3	DI-L25	96.55	96.46	1	0.00	1.50	46.65	0.19	5	15.76	4.28	97.58	97.33	101.92
L_L-L24	Rectangular	DI-L24	DI-L25	94.58	93.31	1	6.00	4.00	749.30	0.17	162	16.23	6.79	99.32	97.27	103.00
L_L-L24	Trapezoidal	DI-L24	DI-L25	102.21	101.80	1	0.00	0.50	749.30	0.00	0	0.00	0.00	97.27	97.27	103.00
L_L-F2	Circular	CI-F2	DI-L24	97.17	97.08	1	0.00	1.50	46.59	0.19	6	15.76	4.56	99.35	99.32	102.69
L_L-L23	Rectangular	MH-L23	DI-L24	95.12	94.58	1	6.00	4.00	326.54	0.16	156	16.41	6.49	100.14	99.32	104.73
L_L-E5	Circular	CI-E5	MH-L23	97.90	97.62	1	0.00	1.50	93.07	0.29	4	15.76	3.77	100.16	100.14	103.80
L_L-L22	Rectangular	MH-L22	MH-L23	95.92	95.12	1	6.00	4.00	105.86	0.14	155	16.43	7.08	100.40	100.14	104.81
L_L-D9	Circular	CI-D9	MH-L22	97.00	96.77	1	0.00	2.50	93.23	0.24	3	15.76	2.48	100.40	100.40	103.53
L_L-A7	Rectangular	CI-A7	DI-R13	96.31	96.22	1	3.00	2.00	62.78	0.14	5	15.76	2.24	97.32	97.31	101.23
L_L-R12	Rectangular	DI-R12	DI-R13	97.27	96.22	1	5.00	2.00	707.92	0.15	20	15.80	3.69	98.37	97.31	102.60
L_L-R12	Trapezoidal	DI-R12	DI-R13	102.10	101.13	1	0.00	0.50	707.92	0.00	0	0.00	0.00	97.31	97.31	102.60
L_L-R11	Rectangular	CI-R11	DI-R12	97.34	97.27	1	3.00	2.00	59.15	0.12	10	15.77	3.06	98.45	98.37	101.93
L_L-L21	Rectangular	L-21	MH-L22	95.41	95.27	1	6.00	4.00	101.78	0.14	154	16.47	6.41	100.66	100.40	104.00
L_L-B1	Rectangular	SD-3	BW-J1	97.36	97.30	1	7.00	3.00	57.00	0.11	86	15.82	4.57	101.63	101.59	103.15
L-BWD6	Circular	BW-D6	CI-R11	97.80	97.58	1	3.00	2.00	215.30	0.00	5	15.77	3.26	98.96	98.45	102.53
L-A2	Circular	A-2	POND6F	97.99	97.81	1	0.00	2.00	36.00	0.50	3	15.75	1.92	101.44	101.43	102.34
L-POND6H	Rectangular	POND6F	POND6H	97.60	97.49	1	4.00	3.00	108.61	0.10	24	16.78	2.46	101.43	101.41	103.50

Table 10.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (10-Year) - Outfalls 9-16

7/12/2011

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 9-10																	
L_L-A-12	Rectangular	2534+93.36	A-12	A-13	88.00	87.59	1.00	7.00	4.00	205.56	0.20	147	16.11	6.57	93.51	93.45	95.64
L_L-A-13	Rectangular	2536+98.92	A-13	A-14	87.59	87.39	1.00	7.00	4.00	100.62	0.20	158	16.10	7.01	93.45	93.41	94.82
L_L-A-14	Rectangular	2538+43.05	A-14	A-15	87.39	87.09	1.00	7.00	4.00	150.06	0.20	164	16.06	7.26	93.41	93.36	94.42
L_L-A-15	Rectangular	2540+73.46	A-15	A-17	87.09	86.44	1.00	7.00	4.00	324.37	0.20	167	16.05	7.69	93.36	93.26	94.94
L_L-A-17	Rectangular	2542+14.55	A-17	A-18	85.44	85.09	1.00	7.00	5.00	176.84	0.20	203	16.04	7.27	93.26	93.22	94.86
Link766	Rectangular		A-17OFF	A-17	86.47	86.44	1.00	4.00	4.00	15.00	0.20	34	15.75	4.61	93.26	93.26	94.86
L_L-A-18	Rectangular	2543+91.39	A-18	A-19	85.09	84.70	1.00	7.00	5.00	192.55	0.20	207	16.04	7.33	93.22	93.18	94.24
L_L-A-19	Rectangular	2545+97.39	A-19	A-20	84.70	84.44	1.00	7.00	5.00	129.54	0.20	211	16.03	7.43	93.18	93.15	93.56
L_L-A-2	Circular	2520+44.58	A-2	A-3	95.80	95.60	1.00	0.00	2.00	98.60	0.20	9	16.01	4.60	97.10	96.67	101.43
L_L-A-20	Rectangular	2547+13.48	A-20	A-21	84.44	84.20	1.00	8.00	5.00	120.46	0.20	214	16.03	6.51	93.15	93.13	93.16
L_L-A-21	Rectangular	2548+33.94	A-21	A-22	84.20	83.89	1.00	8.00	5.00	156.16	0.20	217	16.02	6.36	93.13	93.10	93.16
L_L-A-22	Rectangular	2549+90.10	A-22	A-23	83.89	83.70	1.00	9.00	5.00	92.91	0.20	227	16.02	5.30	93.10	93.09	93.16
L_L-A-23	Rectangular	2550+54.39	A-23	A-24	83.70	83.48	1.00	9.00	5.00	109.98	0.20	245	16.02	5.58	93.09	93.07	93.16
L_L-A-23B	Circular		A-23B	A-23	85.75	85.70	1.00	0.00	3.00	15.00	0.31	15	22.59	5.25	93.09	93.09	92.47
L-A-23OFF	Circular	2550+54.39	A-23OFF	A-23B	89.42	88.94	1.00	0.00	1.50	240.00	0.20	15	22.59	8.42	95.31	93.09	94.00
L_L-A-24	Rectangular	2551+92.77	A-24	A-OUT2	83.48	83.30	1.00	9.00	5.00	92.12	0.20	251	16.02	6.07	93.07	93.03	92.85
L-A-24OFF	Circular		A-24OFF	A-24	90.10	89.54	1.00	0.00	1.50	280.00	0.20	7	15.92	4.69	93.11	93.07	93.50
L_L-A-25	Circular	2519+97.19	A-25	A-26	91.78	91.35	1.00	0.00	3.50	175.50	0.25	43	16.01	5.80	94.32	93.91	99.10
L_L-A-26	Circular	2521+72.68	A-26	A-27	91.35	91.03	1.00	0.00	3.50	124.22	0.25	50	16.02	6.91	93.91	93.45	98.23
L_L-A-27	Circular	2522+96.91	A-27	A-28	90.53	90.28	1.00	0.00	4.00	100.64	0.25	63	16.02	6.45	93.45	93.19	97.61
Link753	Circular	2522+96.37	A-27OFF	A-27	92.57	92.53	1.00	0.00	2.00	15.01	0.25	5	16.00	4.21	93.49	93.45	97.61
L_L-A-28	Circular	2523+97.55	A-28	A-29	90.28	89.91	1.00	0.00	4.00	150.67	0.25	68	16.02	7.15	93.19	92.69	97.96
L_L-A-29	Circular	2526+00.00	A-29	A-30	89.91	89.31	1.00	0.00	4.00	238.42	0.25	73	16.02	9.30	92.69	92.67	98.48
L_L-A-3	Circular	2521+43.25	A-3	A-4	95.10	94.70	1.00	0.00	2.50	199.17	0.20	12	16.01	4.63	96.55	95.87	101.04
L_L-A-30	Rectangular	2527+86.64	A-30	A-31	89.31	88.84	1.00	5.00	4.00	186.43	0.25	-56	17.20	5.37	92.67	92.67	98.56
L_L-A-31	Rectangular	2529+73.07	A-31	A-32	88.84	88.54	1.00	5.00	4.00	122.24	0.25	60	16.02	5.85	92.67	92.71	97.62
L_L-A-32	Rectangular	2530+95.31	A-32	A-34	88.54	88.03	1.00	5.00	4.00	201.60	0.25	65	16.02	6.04	92.71	92.81	97.01
L_L-A-34	Rectangular	2532+96.91	A-34	A-35	88.03	87.66	1.00	5.00	4.00	150.28	0.25	66	16.04	5.64	92.81	92.87	96.01
L_L-A-35	Rectangular	2535+00.00	A-35	A-36	86.66	85.91	1.00	5.00	5.00	299.38	0.25	114	16.03	6.10	92.87	92.91	96.53
Link745	Circular	2534+01.25	A-35OFF	A-35	88.78	88.66	1.00	0.00	3.00	48.32	0.25	46	16.00	7.86	92.89	92.87	94.00
L_L-A-36	Rectangular	2537+47.12	A-36	A-37	85.91	85.53	1.00	5.00	5.00	150.75	0.25	116	16.02	5.88	92.91	92.93	96.53
L_L-A-37	Rectangular	2538+97.86	A-37	A-38	85.53	85.16	1.00	5.00	5.00	149.75	0.25	119	16.02	5.79	92.93	92.94	96.00
L_L-A-38	Rectangular	2540+34.17	A-38	A-39	85.16	84.72	1.00	5.00	5.00	174.51	0.25	124	16.01	5.80	92.94	92.96	95.48
L_L-A-39	Rectangular	2542+00.00	A-39	A-40	84.72	84.35	1.00	5.00	5.00	150.01	0.25	127	16.00	5.69	92.96	92.98	94.87
L_L-A-4	Circular	2523+25.00	A-4	A-5	92.92	92.57	1.00	0.00	3.00	174.36	0.20	18	16.01	5.11	94.55	94.10	100.24
L_L-A-40	Rectangular	2543+58.68	A-40	A-41	84.35	83.97	1.00	5.00	5.00	149.99	0.25	130	15.99	5.58	92.98	92.99	94.34
L_L-A-41	Rectangular	2545+08.68	A-41	A-42	83.97	83.66	1.00	5.00	5.00	125.00	0.25	133	15.99	5.49	92.99	93.00	93.82
L_L-A-42	Rectangular	2546+50.00	A-42	A-43	83.66	83.28	1.00	5.00	5.00	152.41	0.25	136	15.98	5.48	93.00	93.02	93.38
L_L-A-43	Rectangular	2547+86.09	A-43	A-OUT1	83.28	83.00	1.00	5.00	5.00	111.15	0.25	145	15.99	6.07	93.02	93.04	93.16
L_L-A-44	Circular	2516+00.00	A-44	A-25	92.66	92.28	1.00	0.00	3.00	150.17	0.25	37	16.01	6.75	95.01	94.32	99.85
L_L-A-5	Rectangular	2525+18.37	A-5	A-6	90.38	90.03	1.00	5.00	4.00	175.02	0.20	123	16.01	6.93	94.10	93.96	99.54
L_L-A-50	Circular	2549+83.92	A-50	A-OUT1	87.11	87.00	1.00	0.00	2.00	36.79	0.30	9	16.01	4.05	93.04	93.04	93.16
L_L-A-51	Circular	2551+00.00	A-51	A-50	87.51	87.11	1.00	0.00	2.00	134.39	0.30	7	16.01	3.03	93.04	93.04	93.13
L_L-A-5OFF	Circular	2525+18.37	A-5OFF	A-5	90.40	90.38	1.00	0.00	2.50	15.00	0.12	100	16.00	20.24	94.84	94.10	97.77
L_L-A-6	Rectangular	2526+93.37	A-6	A-7	90.03	89.68	1.00	5.00	4.00	175.23	0.20	128	16.01	7.39	93.96	93.85	98.84
L_L-A-7	Rectangular	2528+68.35	A-7	A-8	89.68	89.42	1.00	5.00	4.00	132.85	0.20	133	16.01	8.06	93.85	93.77	98.14
L_L-A-8	Rectangular	2530+01.36	A-8	A-9	88.99	88.53	1.00	6.00	4.00	229.25	0.20	165	16.02	7.72	93.76	93.61	97.61
L_L-A-9	Rectangular	2532+30.90	A-9	A-12	88.53	88.00	1.00	6.00	4.00	262.46	0.20	170	16.03	8.61	93.61	93.51	96.69
L_L-AA-1	Circular	2554+83.94	AA-1	AA-2	85.51	85.40	1.00	0.00	2.50	110.43	0.10	10	16.00	3.22	93.06	92.95	93.08
L_L-AA-10	Rectangular	2559+94.68	AA-10	MH-AA1	85.20	85.05	1.00	5.00	3.00	150.84	0.10	33	15.89	3.93	92.96	92.96	92.95
L_L-AA-11	Rectangular	2561+33.68	AA-11	AA-10	85.35	85.20	1.00	4.00	3.00	149.76	0.10	31	15.86	4.32	92.96	92.96	92.93
L_L-AA-12	Rectangular	2562+83.68	AA-12	AA-11	85.50	85.35	1.00	4.00	3.00	150.00	0.10	23	15.87	3.22	92.96	92.96	92.87
L_L-AA-13	Rectangular	2564+37.71	AA-13	AA-12	86.65	86.50	1.00	3.00	3.00	150.12	0.10	20	15.88	4.96	92.96	92.96	93.49
L_L-AA-14	Circular	2566+83.81	AA-14	AA-13	86.90	86.65	1.00	0.00	3.00	250.02	0.10	16	15.90	4.01	92.96	92.96	93.89
L_L-AA-15	Circular	2568+09.24	AA-15	AA-14	87.03	86.90	1.00	0.00	3.00	125.43	0.10	13	15.95	3.12	92.97	92.96	93.45
L_L-AA-16	Circular	2568+75.00	AA-16	AA-15	87.60	87.53	1.00	0.00	2.50	74.68	0.10	10	16.00	3.87	92.98	92.97	93.19
L_L-AA-17	Circular	2569+59.44	AA-17	AA-16	87.68	87.60	1.00	0.00	2.50	75.52	0.10	6	15.96	2.26	93.01	92.98	93.45
L_L-AA-18	Circular	2570+84.53	AA-18	AA-17	88.30	88.18	1.00	0.00	2.00	125.10	0.10	3	15.78	2.34	93.03	93.01	93.89
L_L-AA-2	Circular	2555+81.97	AA-2	MH-AA2	85.40	85.32	1.00	0.00	2.50	78.43	0.10	12	16.00	4.51	92.95	92.95	93.03
L_L-AA-3	Circular	2558+41.97	AA-3	MH-AA2	83.35	83.18	1.00	0.00	4.50	168.40	0.10	29	16.00	2.05	92.95	92.95	92.97
L_L-AA-4	Circular	2559+33.94	AA-4	AA-3	83.44	83.35	1.00	0.00	4.50	93.84	0.10	28	16.00	2.00	92.96	92.95	92.96
L_L-AA-5	Circular	2560+67.03	AA-5	AA-4	84.08	83.94	1.00	0.00	4.00	133.09	0.10	21	15.77	2.49	92.95	92.96	92.93
L_L-AA-54	Circular	2555+84.93	AA-54	AA-55	86.05	85.75	1.00	0.00	2.50	148.99	0.20	9	16.00	4.21	92.96	92.96	93.03
L_L-AA-55	Circular	2557+32.06	AA-55	MH-AA1	85.25	85.05	1.00	0.00	3.00	99.21	0.20	12	16.01	3.80	92.96	92.96	93.00
L_L-AA-6	Circular	2563+39.39	AA-6	AA-5	84.70	84.58	1.00	0.00	3.50	123.97	0.10	18	15.77	3.16	92.95	92.95	92.89
L_L-AA-7	Circular	2565+33.94	AA-7	AA-6	85.54	85.20	1.00	0.00	3.00	342.94	0.10	15	15.79	3.75	92.96	92.95	92.76
L_L-AA-8	Circular	2566+79.39	AA-8	AA-7	85.65	85.54	1.00	0.00	3.00	106.16	0.10	11	18.48	2.49	92.96	92.96	92.74
L_L-AA-9	Circular	2567+83.94	AA-9	AA-8	86.79	86.65	1.00	0.00	2.00	143.84	0.10	7	18.48	3.17	92.97	92.96	92.85
L_AA-OUT1	**Natural**	**2556+73.29**	**AA-OUT1**	**E117-OUT**	**78.62**	**78.50**	**1.00**	**0.00**	**0.00**	**35.00**	**0.34**	**1182**	**17.32**	**2.28**	**92.95**	**92.95**	**114.24**

Table 10.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (10-Year) - Outfalls 9-16

7/12/2011

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_L-A-OUT1	Natural	2548+97.23	A-OUT1	MH-A4	78.69	78.69	1.00	0.00	0.00	70.00	0.00	1008	17.08	1.54	**93.04**	93.04	114.00
L_L-A-OUT2	Natural	2552+84.79	A-OUT2	AA-OUT1	79.10	78.62	1.00	0.00	0.00	293.00	0.16	1119	17.09	2.82	93.03	92.95	113.93
L_GES-1	Circular	2559+09.48	GES-1	GES-2	81.87	81.40	1.00	0.00	4.00	238.00	0.20	121	15.89	9.55	95.13	94.52	93.50
L_GES-2	Circular		GES-2	GES-3	81.40	80.91	1.00	0.00	4.00	240.00	0.20	121	15.90	9.57	94.52	93.94	93.50
L_GES-3	Circular		GES-3	GES-4	80.41	79.47	1.00	0.00	4.50	668.00	0.14	121	15.90	7.59	93.94	93.12	93.00
L_GES-4	Circular		GES-4	A-OUT1	79.47	78.81	1.00	0.00	4.50	22.00	3.00	121	15.90	7.59	93.12	93.04	90.80
L_L-MH-A1	Natural		MH-A1	A-OUT2	79.03	79.10	1.00	0.00	0.00	70.00	-0.10	1027	17.06	2.20	93.03	93.03	114.08
L_L-MH-A2	Natural		MH-A2	MH-A1	78.78	79.03	1.00	0.00	0.00	10.00	-2.50	1025	17.06	1.68	93.03	93.03	113.93
L_L-MH-A3	Natural		MH-A3	MH-A2	78.69	78.78	1.00	0.00	0.00	424.00	-0.02	1014	17.05	1.75	93.03	93.03	114.00
L_L-MH-A4	Natural		MH-A4	MH-A3	78.69	78.69	1.00	0.00	0.00	25.00	0.00	1009	17.05	2.18	93.04	93.03	104.96
L_L-MH-AA1	Circular	2558+38.68	MH-AA1	MH-AA2	81.63	81.29	1.00	0.00	5.00	342.10	0.10	44	16.01	2.21	92.96	92.95	92.98
L_L-MH-AA2	Circular	2556+72.05	MH-AA2	AA-OUT1	80.29	80.00	1.00	0.00	5.50	164.00	0.18	84	16.00	3.55	92.95	92.95	93.01
L-POND5C	Circular	2549+90.32	POND5C	A-22	84.96	84.89	1.00	0.00	3.00	74.00	0.10	-49	16.52	2.23	93.11	93.10	94.80
L-POND6C	Circular	2534+93.74	POND6C	A-12	88.10	88.00	1.00	0.00	3.00	45.00	0.22	-46	16.53	5.57	93.51	93.51	96.50
L-POND6D	Circular	2532+08.43	POND6D	A-34	88.23	88.03	1.00	0.00	3.00	100.00	0.20	-29	16.54	2.34	92.82	92.81	96.50
L_POND5E	Rectangular	2527+34.53	POND6E	A-30	89.42	89.31	1.00	5.00	4.00	113.50	0.10	-78	16.96	4.04	92.68	92.67	98.00
Outfalls 11																	
L_L-B-10	Rectangular	2581+44.39	B-10	B-12	83.21	82.84	1.00	4.00	3.00	366.26	0.10	34	16.01	4.59	90.04	90.04	90.66
L_L-B-12	Rectangular	2584+84.39	B-12	B-12A	82.84	82.67	1.00	5.00	3.00	167.98	0.10	39	16.00	5.12	90.04	90.04	90.35
L_L-B-12A	Rectangular	2586+17.93	B-12A	B-OUT1	82.67	82.66	1.00	5.00	3.00	10.07	0.12	43	15.99	6.42	90.04	90.04	90.29
L_L-B-13	Circular	2572+83.66	B-13	B-14	87.15	87.00	1.00	0.00	2.00	150.25	0.10	3	15.77	2.69	90.07	90.07	93.59
L_L-B-14	Circular	2574+33.80	B-14	B-15	86.50	86.45	1.00	0.00	2.50	49.91	0.10	7	15.79	3.52	90.07	90.07	92.61
L_L-B-15	Circular	2575+45.00	B-15	B-16	85.95	85.88	1.00	0.00	3.00	75.20	0.10	10	15.82	2.57	90.07	90.07	92.29
L_L-B-16	Rectangular	2575+58.83	B-16	B-17	85.88	85.78	1.00	3.00	3.00	100.00	0.10	13	15.84	2.50	90.07	90.07	92.55
L_L-B-17	Rectangular	2576+58.83	B-17	B-18	85.78	85.48	1.00	3.00	3.00	299.81	0.10	16	16.00	3.07	90.07	90.07	92.90
L_L-B-18	Rectangular	2579+50.00	B-18	B-19	85.48	85.35	1.00	3.00	3.00	124.99	0.10	20	16.01	4.01	90.07	90.07	92.20
L_L-B-19	Rectangular	2580+85.38	B-19	B-20	85.35	85.25	1.00	4.00	3.00	101.87	0.10	26	16.01	4.03	90.07	90.07	91.39
L_L-B-20	Rectangular	2581+85.60	B-20	B-OUT3	85.26	85.12	1.00	4.00	3.00	133.92	0.10	32	16.01	5.49	90.07	90.07	91.75
L_L-B-22	Circular	2587+40.10	B-22	B-OUT1	82.87	82.66	1.00	0.00	2.50	105.78	0.20	11	16.00	4.61	90.04	90.04	90.24
L_L-B-24	Circular	2589+39.39	B-24	B-22	83.64	83.37	1.00	0.00	2.00	133.43	0.20	4	16.01	3.30	90.04	90.04	90.18
L_L-B-25	Rectangular	2584+80.35	B-25	B-OUT3	80.36	80.11	1.00	5.00	3.00	259.23	0.10	62	16.00	4.13	90.07	90.07	91.14
L_L-B-26	Rectangular	2587+00.00	B-26	B-25	80.46	80.36	1.00	5.00	3.00	100.15	0.10	57	16.00	3.76	90.07	90.07	90.49
L_L-B-27	Rectangular	2588+00.00	B-27	B-26	80.51	80.46	1.00	5.00	3.00	49.85	0.10	53	16.00	3.49	90.07	90.07	90.66
L_L-B-28	Rectangular	2588+58.77	B-28	B-27	80.64	80.51	1.00	4.00	3.00	125.00	0.10	49	15.99	4.10	90.07	90.07	91.10
L_L-B-3	Circular	2571+39.39	B-3	B-4	85.18	85.01	1.00	0.00	2.00	174.85	0.10	4	16.00	2.86	90.04	90.04	92.72
L_L-B-4	Circular	2572+83.89	B-4	B-5	84.51	84.31	1.00	0.00	2.50	199.78	0.10	9	16.01	3.18	90.04	90.04	92.02
L_L-B-5	Circular	2574+39.39	B-5	B-6	83.81	83.66	1.00	0.00	3.00	149.89	0.10	14	16.01	2.98	90.04	90.04	91.22
L_L-B-6	Rectangular	2576+33.78	B-6	B-7	83.66	83.51	1.00	3.00	3.00	150.00	0.10	18	16.01	3.11	90.04	90.04	91.03
L_L-B-7	Rectangular	2577+89.39	B-7	B-9	83.51	83.35	1.00	4.00	3.00	156.60	0.10	22	16.02	2.78	90.04	90.04	90.90
L_L-B-9	Rectangular	2579+40.38	B-9	B-10	83.35	83.21	1.00	4.00	3.00	143.61	0.10	30	16.01	3.71	90.04	90.04	90.78
L_L-B-OUT1	Trapezoidal	2586+28.00	B-OUT1	MH-B4	79.59	79.48	1.00	10.00	11.00	109.00	0.10	386	16.80	3.07	90.04	90.03	90.65
L_L-B-OUT3	Trapezoidal	2583+21.19	B-OUT3	MH-B6	80.09	80.01	1.00	10.00	11.00	80.00	0.10	611	16.53	3.04	**90.07**	90.06	92.21
L_L-MH-B1	Circular	2589+37.61	MH-B1	MH-B2	80.92	80.76	1.00	0.00	3.00	115.47	0.14	43	15.99	6.04	90.07	90.07	92.29
L_L-MH-B2	Rectangular	2589+38.16	MH-B2	MH-B3	80.76	80.72	1.00	4.00	3.00	41.54	0.10	43	15.99	3.57	90.07	90.07	91.38
L_L-MH-B3	Rectangular	2589+38.16	MH-B3	B-28	80.72	80.64	1.00	4.00	3.00	79.39	0.10	43	15.99	3.57	90.07	90.07	91.38
L_L-MH-B4	**Trapezoidal**		**MH-B4**	**SYS-B-OUT**	**79.48**	**79.16**	**1.00**	**10.00**	**11.00**	**330.00**	**0.10**	**380**	**16.80**	**3.39**	**90.03**	**90.02**	**91.00**
L_L-MH-B5	Trapezoidal		MH-B5	B-OUT1	79.67	79.59	1.00	10.00	11.00	86.00	0.09	377	16.79	2.56	90.04	90.04	91.00
L_L-MH-B6	Trapezoidal		MH-B6	MH-B5	80.01	79.67	1.00	10.00	11.00	337.00	0.10	383	16.79	2.58	90.06	90.04	91.50
L_L-MH-B7	Trapezoidal		MH-B7	B-OUT3	83.18	80.09	1.00	10.00	11.00	36.00	8.58	908	16.54	6.41	90.05	90.07	94.80
L_L-MH-B8	Natural		MH-B8	MH-B7	83.86	83.18	1.00	0.00	0.00	206.00	0.33	369	16.74	7.26	90.49	90.05	93.73
Outfalls 12																	
L_L-C-1	Circular	2597+00.00	C-1	MH-C1	82.00	81.93	1.00	0.00	3.00	34.91	0.20	19	16.01	2.59	89.44	89.44	89.81
L_L-C-12	Rectangular	2603+25.00	C-12	C-6	81.15	81.05	1.00	4.00	3.00	100.09	0.10	33	16.01	2.77	89.44	89.44	89.32
L_L-C-13	Rectangular	2604+53.77	C-13	C-12	81.27	81.15	1.00	3.00	3.00	120.00	0.10	31	16.01	3.40	89.44	89.44	89.23
L_L-C-14	Rectangular	2604+83.92	C-14	C-13	81.30	81.27	1.00	3.00	3.00	30.15	0.10	27	16.00	3.04	89.44	89.44	89.21
L_L-C-15	Circular	2605+53.77	C-15	C-14	81.37	81.30	1.00	0.00	3.00	69.85	0.10	25	16.00	3.49	89.44	89.44	89.08
L_L-C-2	Rectangular	2598+08.91	C-2	MH-C1	80.63	80.54	1.00	4.00	3.00	90.09	0.10	45	16.01	3.71	89.44	89.44	89.72
L_L-C-21	Circular	2597+39.39	C-21	MH-C2	82.35	82.09	1.00	0.00	3.00	256.54	0.10	16	15.79	3.94	89.43	89.43	89.70
L_L-C-22	Circular	2599+40.10	C-22	C-21	82.50	82.35	1.00	0.00	3.00	153.05	0.10	12	15.79	2.84	89.43	89.43	89.59
L_L-C-23	Circular	2600+95.79	C-23	C-22	83.66	83.50	1.00	0.00	2.00	155.69	0.10	4	16.00	2.97	89.44	89.43	89.47
L_L-C-30	Circular	2592+20.80	C-30	C-31	83.93	83.70	1.00	0.00	2.00	112.98	0.20	3	16.02	1.93	89.44	89.44	91.10
L_L-C-31	Circular	2593+10.00	C-31	C-32	83.70	83.30	1.00	0.00	2.00	200.00	0.20	6	16.02	3.27	89.44	89.44	90.36
L_L-C-32	Circular	2595+33.77	C-32	C-1	82.80	82.50	1.00	0.00	2.50	150.15	0.20	12	16.01	3.06	89.44	89.44	89.92
L_L-C-5	Rectangular	2601+33.77	C-5	C-2	80.95	80.63	1.00	4.00	3.00	324.86	0.10	40	16.01	3.32	89.44	89.44	89.47
L_L-C-6	Rectangular	2602+33.69	C-6	C-5	81.05	80.95	1.00	4.00	3.00	99.91	0.10	36	16.01	2.99	89.44	89.44	89.39
L_L-C-7	Circular	2591+93.68	C-7	C-8	83.79	83.50	1.00	0.00	2.00	146.42	0.20	4	16.00	3.08	89.43	89.43	90.06
L_L-C-8	Circular	2593+39.39	C-8	C-9	83.00	82.73	1.00	0.00	2.50	136.58	0.20	12	16.00	4.64	89.43	89.43	90.00
L_L-C-9	Circular	2594+76.68	C-9	MH-C2	82.23	82.12	1.00	0.00	3.00	53.83	0.20	16	16.00	4.33	89.43	89.43	89.94

Table 10.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (10-Year) - Outfalls 9-16

7/12/2011

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_L-C-OUT	Natural	2595+83.66	C-OUT	MH-C4	79.64	79.39	1.00	0.00	8.50	250.00	0.10	231	16.00	3.29	89.43	89.43	90.32
L_L-MH-C1	Rectangular	2597+22.00	MH-C1	MH-C2	80.54	79.68	2.00	5.00	3.00	340.25	0.25	203	16.00	6.75	89.44	89.43	89.78
L_L-MH-C2	Rectangular	2595+30.51	MH-C2	C-OUT	79.68	79.64	2.00	5.00	3.00	15.54	0.25	234	16.00	7.77	89.43	89.43	89.89
L_L-MH-C3	Circular	2597+43.79	MH-C3	MH-C1	80.65	80.54	1.00	0.00	4.50	48.14	0.23	140	16.00	8.89	89.44	89.44	90.39
L-MH-C4	**Natural**		**MH-C4**	**SYS-C-OUT**	**79.39**	**79.34**	**1.00**	**0.00**	**8.50**	**50.00**	**0.10**	**226**	**16.00**	**3.60**	**89.43**	**89.43**	**89.00**
Outfalls 13																	
L_L-D-1	Circular	2610+83.96	D-1	D-2	80.90	80.50	1.00	0.00	3.00	142.00	0.28	37	16.00	7.10	87.74	87.74	88.14
L_L-D-10	Circular	2622+54.39	D-10	D-9	80.90	80.50	1.00	0.00	2.50	143.88	0.28	15	0.00	4.03	87.71	87.71	87.16
L_L-D-11	Circular	2624+89.90	D-11	D-10	81.82	81.40	1.00	0.00	2.00	150.51	0.28	5	0.00	4.41	87.71	87.71	86.97
L_L-D-14	Circular	2620+33.62	D-14	D-20	77.88	77.60	1.00	0.00	3.50	98.98	0.28	37	0.00	6.02	87.74	87.74	87.56
L_L-D-15	Circular	2621+83.62	D-15	D-14	78.80	78.38	1.00	0.00	3.00	150.00	0.28	28	0.00	6.74	87.74	87.74	87.45
L_L-D-16	Circular	2624+25.00	D-16	D-15	79.44	78.80	1.00	0.00	3.00	230.59	0.28	26	0.00	5.05	87.74	87.74	87.18
L_L-D-17	Circular	2625+38.62	D-17	D-16	79.79	79.44	1.00	0.00	3.00	124.41	0.28	22	0.00	4.76	87.74	87.74	86.94
L_L-D-18	Circular	2626+84.64	D-18	D-17	80.70	80.29	1.00	0.00	2.50	146.02	0.28	18	0.00	6.22	87.75	87.74	86.74
L_L-D-19	Circular	2628+33.62	D-19	D-18	81.62	81.20	1.00	0.00	2.00	148.98	0.28	9	0.00	5.27	87.75	87.75	86.75
L_L-D-2	Circular	2612+60.00	D-2	D-4	80.00	79.25	1.00	0.00	3.50	267.92	0.28	41	15.99	5.96	87.74	87.74	88.15
L_L-D-20	Circular	2619+78.92	D-20	D-OUT2	77.60	77.41	1.00	0.00	3.50	66.33	0.28	41	0.00	7.24	87.74	87.74	87.64
L_L-D-21	Circular	2616+83.92	D-21	D-OUT1	78.56	78.49	1.00	0.00	3.00	27.69	0.28	34	0.00	7.24	87.70	87.70	87.72
L_L-D-29	Circular	2602+89.39	D-29	D-30	83.09	82.58	1.00	0.00	2.00	256.26	0.20	6	0.00	4.64	87.71	87.71	89.22
L_L-D-3	Circular	2608+35.00	D-3	D-1	82.32	81.90	1.00	0.00	2.00	150.03	0.28	5	0.00	4.46	87.74	87.74	88.40
L_L-D-30	Circular	2606+75.39	D-30	D-31	82.08	81.85	1.00	0.00	2.50	115.32	0.20	15	0.00	5.72	87.71	87.71	88.79
L_L-D-31	Circular	2607+89.92	D-31	D-32	81.35	81.13	1.00	0.00	3.00	110.09	0.20	22	0.00	3.90	87.71	87.71	88.58
L_L-D-32	Circular	2610+61.54	D-32	D-34	81.13	80.34	1.00	0.00	3.00	395.97	0.20	27	0.00	6.61	87.71	87.70	88.38
L_L-D-34	Circular	2612+95.66	D-34	D-35	79.84	79.55	1.00	0.00	3.50	143.98	0.20	36	0.00	4.92	87.70	87.70	88.15
L_L-D-35	Circular	2614+17.08	D-35	D-OUT1	79.55	79.12	1.00	0.00	3.50	217.32	0.20	40	0.00	7.17	87.70	87.70	88.15
L_L-D-4	Circular	2614+94.45	D-4	D-5	79.25	78.86	1.00	0.00	3.50	139.63	0.28	47	16.01	6.28	87.74	87.74	88.15
L_L-D-5	Circular	2616+34.26	D-5	D-6	78.86	78.64	1.00	0.00	3.50	80.34	0.28	48	16.01	7.07	87.74	87.74	88.09
L_L-D-6	Circular	2616+75.77	D-6	D-OUT2	78.14	77.71	1.00	0.00	4.00	153.67	0.28	50	16.01	6.96	87.74	87.74	88.00
L_L-D-7	Circular	2617+62.20	D-7	D-21	78.72	78.56	1.00	0.00	3.00	55.50	0.28	31	0.00	6.26	87.71	87.70	87.66
L_L-D-8	Circular	2619+15.37	D-8	D-7	79.21	78.72	1.00	0.00	3.00	175.98	0.28	26	0.00	4.97	87.71	87.71	87.36
L_L-D-9	Circular	2621+95.51	D-9	D-8	80.50	79.71	1.00	0.00	2.50	280.37	0.28	20	0.00	6.36	87.71	87.71	87.36
L_L-D-OUT1	Rectangular	2616+45.00	D-OUT1	MH-D1	71.77	71.66	1.00	8.00	12.00	100.00	0.11	358	16.51	6.45	87.70	87.70	88.01
Link837	Rectangular	2618+71.50	D-OUT2	D-OUT1	72.11	71.77	1.00	8.00	12.00	345.00	0.10	334	16.51	4.04	87.74	87.70	87.71
L_L-MH-D1	**Rectangular**		**MH-D1**	**SYS-D-OUT**	**71.66**	**70.96**	**1.00**	**8.00**	**12.00**	**160.00**	**0.44**	**358**	**16.51**	**6.80**	**87.70**	**87.68**	**88.00**
L_L-MH-D2	Rectangular		MH-D2	D-OUT2	72.26	72.11	1.00	8.00	12.00	150.00	0.10	296	16.51	3.09	87.75	87.74	88.04
Outfalls 14																	
L_L-E-1	Circular	2630+39.39	E-1	E-2	80.10	80.01	1.00	0.00	3.00	95.10	0.10	16	0.00	5.88	83.93	83.93	86.12
L_L-E-10	Rectangular	2641+59.39	E-10	MH-E1	78.98	78.90	1.00	5.00	3.00	82.68	0.10	38	0.00	3.60	83.89	83.89	86.40
L_L-E-11	Rectangular	2642+84.79	E-11	MH-E1	78.90	78.85	1.00	4.00	3.00	42.71	0.10	36	0.00	2.83	83.89	83.89	85.96
L_L-E-12	Rectangular	2644+34.82	E-12	E-18	79.05	78.95	1.00	4.00	3.00	95.44	0.10	29	0.00	2.82	83.90	83.89	86.10
L_L-E-13	Rectangular	2645+84.70	E-13	E-12	79.20	79.05	1.00	4.00	3.00	149.88	0.10	26	0.00	2.74	83.91	83.90	86.63
L_L-E-14	Rectangular	2648+74.39	E-14	E-13	79.47	79.20	1.00	3.00	3.00	275.00	0.10	22	0.00	6.30	83.93	83.91	86.75
L_L-E-15	Circular	2650+09.70	E-15	E-14	79.62	79.47	1.00	0.00	3.00	150.00	0.10	19	0.00	6.43	83.94	83.93	86.22
L_L-E-16	Circular	2651+39.39	E-16	E-15	79.75	79.62	1.00	0.00	3.00	129.69	0.10	14	0.00	2.46	83.94	83.94	85.77
L_L-E-17	Circular	2652+56.41	E-17	E-16	80.87	80.75	1.00	0.00	2.00	117.02	0.10	6	0.00	4.65	83.95	83.94	86.18
L_L-E-18	Rectangular	2643+74.39	E-18	E-11	78.95	78.90	1.00	4.00	3.00	54.60	0.10	34	0.00	3.04	83.89	83.89	85.77
L_L-E-2	Rectangular	2631+34.49	E-2	E-6	80.01	79.58	1.00	3.00	3.00	421.71	0.10	22	0.00	6.33	83.93	83.91	86.45
L_L-E-20	Circular	2630+80.00	E-20	E-21	81.48	81.33	1.00	0.00	2.00	150.00	0.10	5	0.00	4.36	84.32	84.14	87.11
L_L-E-21	Rectangular	2633+83.62	E-21	E-22	80.33	80.23	1.00	3.00	3.00	101.02	0.10	30	15.76	6.02	84.14	84.11	86.58
Link840	Circular	2633+83.62	E-21OFF	E-21	80.85	80.83	1.00	0.00	2.50	14.00	0.10	23	15.75	6.48	84.16	84.14	86.93
L_L-E-22	Rectangular	2635+50.00	E-22	E-23	80.23	80.10	1.00	4.00	3.00	132.79	0.10	36	15.80	3.65	84.11	84.13	86.23
L_L-E-23	Rectangular	2636+17.43	E-23	E-25	80.10	79.78	1.00	4.00	3.00	319.48	0.10	40	15.81	3.95	84.13	84.33	86.70
L_L-E-25	Rectangular	2639+36.91	E-25	E-26	79.78	79.62	1.00	4.00	3.00	155.07	0.10	43	15.83	6.67	84.33	84.26	86.75
L_L-E-26	Rectangular	2640+10.00	E-26	E-27	79.62	79.53	1.00	5.00	3.00	92.65	0.10	47	15.84	4.25	84.26	84.18	86.21
L_L-E-27	Rectangular	2641+84.64	E-27	E-28	79.53	79.40	1.00	5.00	3.00	135.41	0.10	53	15.84	6.54	84.18	84.23	85.88
L_L-E-28	Rectangular	2643+20.04	E-28	MH-E1	78.39	78.10	2.00	6.00	3.00	291.35	0.10	155	0.00	4.07	84.23	83.89	86.36
L_L-E-30	Rectangular	2645+70.00	E-30	E-28	78.69	78.39	1.00	5.00	3.00	293.84	0.10	81	16.00	5.39	85.41	84.23	86.48
Link820	Rectangular	2646+14.29	E-30OFF	E-30	80.55	80.52	1.00	5.00	3.00	14.01	0.20	26	19.73	6.22	85.10	85.41	86.40
L_L-E-31	Rectangular	2647+58.62	E-31	E-30	78.83	78.69	1.00	5.00	3.00	144.74	0.10	60	16.00	4.02	85.33	85.41	85.97
L_L-E-32	Rectangular	2648+86.13	E-32	E-31	78.96	78.83	1.00	4.00	3.00	127.51	0.10	57	16.00	6.75	85.10	85.33	85.53
L_L-E-33	Rectangular	2649+84.64	E-33	E-32	79.06	78.96	1.00	4.00	3.00	98.50	0.10	54	16.00	4.45	84.91	85.10	85.18
L_L-E-34	Rectangular	2651+30.00	E-34	E-33	79.20	79.06	1.00	4.00	3.00	135.68	0.10	48	16.00	3.97	85.07	84.91	85.66
Link836	Rectangular	2651+73.01	E-34OFF	E-34	79.25	79.20	1.00	4.00	3.00	52.69	0.10	44	16.00	3.64	85.15	85.07	85.25
L_L-E-4	Circular	2627+89.39	E-4	E-5	81.35	81.23	1.00	0.00	2.00	123.29	0.10	5	0.00	4.32	83.95	83.94	87.01
L_L-E-5	Circular	2629+07.98	E-5	E-1	80.73	80.60	1.00	0.00	2.50	131.41	0.10	9	0.00	4.85	83.94	83.93	86.58
L_L-E-6	Rectangular	2633+39.39	E-6	E-7	79.58	79.40	1.00	4.00	3.00	183.19	0.10	26	0.00	2.65	83.91	83.90	86.41
L_L-E-7	Rectangular	2637+39.39	E-7	E-8	79.40	79.26	1.00	4.00	3.00	137.86	0.10	33	0.00	6.60	83.90	83.90	85.77
L_L-E-8	Rectangular	2638+59.39	E-8	E-10	79.26	78.98	1.00	5.00	3.00	282.14	0.10	37	0.00	3.10	83.90	83.89	86.25

Table 10.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (10-Year) - Outfalls 9-16

7/12/2011

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_L-E-OUT	Trapezoidal	2642+93.77	E-OUT	MH-E2	78.09	77.78	1.00	8.00	8.00	310.00	0.10	216	16.01	3.78	83.88	83.86	86.14
L_L-MH-E1	Rectangular	2642+40.00	MH-E1	E-OUT	78.10	78.09	2.00	6.00	3.00	16.60	0.10	240	0.00	5.99	83.89	83.88	86.11
L_L-MH-E2	**Trapezoidal**		**MH-E2**	**SYS-E-OUT**	**77.78**	**77.73**	**1.00**	**8.00**	**8.00**	**50.00**	**0.10**	**216**	**16.02**	**5.57**	**83.86**	**83.85**	**86.00**
Outfalls 15																	
L_L-F-1	Circular	2654+64.39	F-1	F-2	81.03	80.49	1.00	0.00	2.00	191.26	0.28	3	16.00	2.17	82.61	82.61	86.35
L_L-F-10	Circular	2670+84.70	F-10	F-9	76.05	75.85	1.00	0.00	3.50	200.00	0.10	20	16.01	2.11	82.60	82.60	83.92
L_L-F-11	Circular	2672+29.19	F-11	F-10	76.20	76.05	1.00	0.00	3.50	154.69	0.10	19	16.01	1.96	82.60	82.60	83.22
L_L-F-12	Circular	2675+51.39	F-12	F-11	76.45	76.20	1.00	0.00	3.50	250.00	0.10	16	16.01	1.70	82.60	82.60	82.97
L_L-F-13	Circular	2675+76.61	F-13	F-12	77.04	76.95	1.00	0.00	3.00	87.22	0.10	14	16.01	1.98	82.60	82.60	83.27
L_L-F-14	Circular	2677+13.58	F-14	F-13	77.17	77.04	1.00	0.00	3.00	136.97	0.10	13	16.00	1.83	82.60	82.60	83.75
L_L-F-15	Circular	2655+83.62	F-15	F-16	80.01	79.69	1.00	0.00	2.00	114.01	0.28	7	16.02	3.82	82.61	82.61	85.18
L_L-F-15A	Circular	2654+33.62	F-15A	F-15	80.43	80.01	1.00	0.00	2.00	150.00	0.28	4	16.03	2.31	82.61	82.61	85.71
L_L-F-16	Circular	2656+10.00	F-16	F-17	79.19	78.95	1.00	0.00	2.50	87.01	0.28	10	16.02	2.42	82.61	82.61	84.79
L_L-F-17	Circular	2657+84.64	F-17	F-18	78.95	78.59	1.00	0.00	2.50	127.69	0.28	15	16.01	3.11	82.61	82.61	84.48
L_L-F-18	Circular	2660+10.00	F-18	F-20	78.09	77.15	1.00	0.00	3.00	335.94	0.28	35	15.81	5.31	82.61	82.60	84.93
L_L-F-2	Circular	2657+64.67	F-2	F-4	80.49	80.00	1.00	0.00	2.00	174.72	0.28	8	16.00	4.47	82.61	82.61	85.68
L_L-F-20	Rectangular	2662+48.26	F-20	F-6	74.85	74.28	2.00	8.00	5.00	285.09	0.20	457	16.00	5.71	82.60	82.60	84.96
L_L-F-25	Rectangular	2663+95.00	F-25	F-20	75.12	74.85	2.00	8.00	5.00	136.38	0.20	420	16.00	5.24	82.61	82.60	84.48
L_L-F-26	Circular	2664+83.78	F-26	F-25	75.95	75.75	1.00	0.00	3.50	99.15	0.20	29	16.01	2.98	82.61	82.61	84.83
L_L-F-28	Circular	2668+88.27	F-28	F-26	77.20	76.45	1.00	0.00	3.00	374.84	0.20	24	16.01	3.36	82.61	82.61	84.66
L_L-F-29	Circular	2669+84.64	F-29	F-28	77.45	77.20	1.00	0.00	3.00	126.02	0.20	14	16.01	1.99	82.61	82.61	84.03
L_L-F-3	Circular	2678+84.39	F-3	F-14	78.35	78.17	1.00	0.00	2.00	180.37	0.10	4	16.00	1.33	82.60	82.60	84.39
L_L-F-31	Circular	2672+34.64	F-31	F-29	78.45	77.95	1.00	0.00	2.50	250.00	0.20	11	16.01	2.76	82.61	82.61	83.95
L_L-F-32	Circular	2673+22.22	F-32	F-31	79.08	78.95	1.00	0.00	2.00	64.70	0.20	9	16.01	4.02	82.61	82.61	84.18
L_L-F-33	Circular	2674+33.39	F-33	F-32	79.35	79.08	1.00	0.00	2.00	134.05	0.20	8	16.01	3.13	82.61	82.61	84.65
L_L-F-4	Circular	2658+89.39	F-4	F-5	79.50	79.26	1.00	0.00	2.50	84.38	0.28	15	16.00	5.34	82.61	82.61	85.07
L_L-F-5	Circular	2660+23.77	F-5	F-6	78.76	78.18	1.00	0.00	3.00	207.07	0.28	20	16.01	4.56	82.61	82.60	85.36
L_L-F-6	Rectangular	2663+74.39	F-6	F-OUT	74.28	74.25	2.00	8.00	5.00	14.01	0.20	519	16.00	6.48	82.60	82.60	86.09
L_L-F-7	Circular	2665+84.70	F-7	F-6	75.05	74.69	1.00	0.00	4.00	353.87	0.10	37	16.00	2.92	82.60	82.60	86.17
L_L-F-8	Circular	2667+34.70	F-8	F-7	75.20	75.05	1.00	0.00	4.00	150.00	0.10	33	16.01	2.63	82.60	82.60	85.49
L_L-F-9	Circular	2668+29.39	F-9	F-8	75.35	75.20	1.00	0.00	4.00	150.00	0.10	29	16.01	2.33	82.60	82.60	84.82
L_L-F-OUT	Natural	2662+90.99	F-OUT	MH-F2	74.25	74.12	1.00	0.00	0.00	44.00	0.29	519	16.00	3.59	82.60	82.60	86.76
L_L-MH-F1	Circular	2664+14.93	MH-F1	F-25	75.22	75.12	1.00	0.00	4.00	49.95	0.20	385	16.00	30.47	84.34	82.61	85.49
L_L-MH-F2	**Natural**		**MH-F2**	**SYS-F-OUT**	**74.12**	**73.69**	**1.00**	**0.00**	**0.00**	**855.00**	**0.05**	**516**	**16.03**	**4.80**	**82.60**	**82.60**	**86.65**
Outfalls 16																	
L_L-G-10	Circular	2690+13.90	G-10	G-9	75.76	75.55	1.00	0.00	3.00	74.51	0.28	33	16.03	5.64	81.45	81.45	81.96
L_L-G-12	Circular	2692+09.62	G-12	G-10	76.81	76.26	1.00	0.00	2.50	195.72	0.28	20	16.01	5.05	81.45	81.45	82.94
L_L-G-13	Circular	2694+69.39	G-13	G-12	77.88	77.31	1.00	0.00	2.00	204.87	0.28	9	16.01	4.04	81.45	81.45	83.96
L_L-G-15	Circular	2677+65.00	G-15	G-16	78.05	77.70	1.00	0.00	2.50	126.07	0.28	13	15.91	4.86	81.45	81.45	84.05
L_L-G-16	Circular	2678+84.64	G-16	G-18	77.20	76.94	1.00	0.00	3.00	91.51	0.28	25	15.86	6.10	81.45	81.45	83.23
L_L-G-18	Circular	2679+76.15	G-18	G-19	76.44	75.30	1.00	0.00	3.50	407.47	0.28	36	16.06	5.52	81.45	81.45	83.55
L_L-G-19	Circular	2682+45.00	G-19	G-20	75.30	74.88	1.00	0.00	3.50	149.85	0.28	47	16.06	6.95	81.45	81.45	83.28
L_L-G-20	Circular	2685+33.47	G-20	G-21	74.33	73.78	1.00	0.00	4.00	199.30	0.28	56	16.07	5.73	81.45	81.45	82.53
L_L-G-21	Circular	2687+32.77	G-21	G-22	73.78	73.60	1.00	0.00	4.00	61.86	0.28	64	16.06	6.43	81.45	81.45	81.84
L_L-G-22	Circular	2687+46.84	G-22	MH-G2	73.60	73.20	1.00	0.00	4.00	142.87	0.28	71	16.05	7.09	81.45	81.45	81.81
L_L-G-23	Circular	2690+04.42	G-23	MH-G2	74.95	74.82	1.00	0.00	3.00	47.42	0.28	26	16.02	5.67	81.45	81.45	81.74
L_L-G-24	Circular	2690+33.62	G-24	G-23	75.59	75.45	1.00	0.00	2.50	48.98	0.28	20	16.03	5.60	81.45	81.45	81.71
L_L-G-25	Circular	2691+58.62	G-25	G-24	75.94	75.59	1.00	0.00	2.50	125.00	0.28	16	16.08	4.12	81.45	81.45	81.86
L_L-G-26	Circular	2692+63.62	G-26	G-25	76.73	76.44	1.00	0.00	2.00	105.00	0.28	6	16.02	3.79	81.45	81.45	82.39
L_L-G-3	Circular	2681+59.70	G-3	G-4	78.11	77.62	1.00	0.00	2.00	175.00	0.28	3	16.00	2.14	81.45	81.45	84.29
L_L-G-4	Circular	2683+34.70	G-4	G-5	77.62	77.27	1.00	0.00	2.00	125.00	0.28	7	16.01	4.40	81.45	81.45	83.42
L_L-G-5	Circular	2684+59.70	G-5	G-6	76.77	76.49	1.00	0.00	2.50	100.00	0.28	10	16.00	3.73	81.45	81.45	82.79
L_L-G-6	Circular	2685+59.70	G-6	G-7	76.49	76.15	1.00	0.00	2.50	119.69	0.28	13	16.00	4.18	81.45	81.45	82.29
L_L-G-7	Circular	2686+25.63	G-7	MH-G1	76.15	75.70	1.00	0.00	2.50	159.59	0.28	16	15.94	5.33	81.45	81.45	81.83
L_L-G-8	Circular	2688+80.78	G-8	MH-G1	75.39	75.27	1.00	0.00	3.00	41.81	0.28	41	16.03	7.46	81.45	81.45	81.88
L_L-G-9	Circular	2689+74.06	G-9	G-8	75.55	75.39	1.00	0.00	3.00	58.61	0.28	39	16.03	6.81	81.45	81.45	81.73
L_L-G-OUT	Circular	2688+03.42	G-OUT	MH-G3	69.57	69.27	1.00	0.00	6.00	477.00	0.06	152	16.04	5.15	81.45	81.44	82.02
L_L-MH-G1	Circular	2688+38.98	MH-G1	G-OUT	71.39	70.07	1.00	0.00	5.50	415.94	0.32	152	16.03	6.16	81.45	81.45	82.09
L_L-MH-G2	Circular	2689+37.43	MH-G2	MH-G1	72.70	71.86	1.00	0.00	4.50	300.58	0.28	97	16.06	6.38	81.45	81.45	81.76
L_L-MH-G3	Circular		MH-G3	MH-G4	68.77	68.51	1.00	0.00	6.50	518.00	0.05	313	16.04	9.43	81.44	81.44	82.92
L_L-MH-G4	Circular		MH-G4	MH-G5	68.51	68.21	1.00	0.00	6.50	230.00	0.13	312	16.04	10.43	81.44	81.43	82.82
L_L-MH-G5	**Circular**		**MH-G5**	**SYS-G-OUT**	**68.21**	**68.11**	**1.00**	**0.00**	**6.50**	**100.00**	**0.10**	**311**	**16.05**	**11.43**	**81.43**	**81.43**	**81.62**

Table 11.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (10-Year) - Outfalls 17-19

Model: US290_SegA_BNGLHOL_Mit10-8-31-09.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 17-19																	
L_L-A-1	Rectangular		A-1	A-2	74.39	74.00	1	6.00	4.00	388.61	0.10	30	16.01	1.24	81.43	81.43	82.75
L_L-J-A-10	Circular	2708+59.50	A-10	J-A-10	73.44	73.10	1	0.00	5.00	342.60	0.10	98	16.01	5.00	81.66	81.32	81.93
E11504_1	**Rectangular**		**A102**	**E11504.1**	**71.38**	**70.92**	**1**	**8.00**	**5.00**	**221.00**	**0.21**	**278**	**16.01**	**6.93**	**81.30**	**81.59**	**80.50**
L_L-A-11A	Rectangular	2713+84.74	A-11	A-12	72.67	72.56	1	8.00	5.00	115.27	0.10	186	16.63	5.27	81.28	81.17	82.19
L-A102	Rectangular	2713+84.74	A-11	Node386	71.81	71.79	1	8.00	5.00	20.00	0.10	263	16.01	6.57	81.28	81.28	82.19
L_L-A-12	Rectangular	2715+00.00	A-12	J-A-12	72.56	72.29	1	8.00	5.00	268.38	0.10	199	16.62	5.59	81.17	80.89	81.79
Link335	Rectangular	2720+87.18	A-13	B-9	71.97	71.38	1	8.00	5.00	583.67	0.10	226	16.62	6.21	80.49	79.81	81.84
L-A-2	Rectangular	2705+49.95	A-2	J-A-2	74.00	73.65	1	6.00	4.00	346.60	0.10	74	16.01	3.07	81.43	81.41	81.67
Link348	Circular	2705+49.95	A-2	J-A-9	74.00	73.68	1	0.00	4.00	320.00	0.10	14	15.77	1.38	81.43	81.42	81.67
L_L-A-3	Rectangular	2712+00.00	A-3	J-A-5	73.35	73.14	1	6.00	4.00	211.25	0.10	121	16.01	5.01	81.40	81.37	81.67
L_L-A-5	Circular	2718+00.00	A-5	J-A-5	74.78	74.00	1	0.00	3.50	388.75	0.20	15	16.01	1.60	81.35	81.37	81.67
Link347	Circular	2718+00.00	A-5	J-A-12	74.77	74.07	1	0.00	2.50	280.00	0.25	19	16.01	3.91	81.35	80.89	81.67
L_L-A-8	Circular	2697+00.00	A-8	J-A-8	74.60	74.34	1	0.00	4.00	256.78	0.10	32	16.01	2.56	81.88	81.76	81.79
L_L-J-A-9	Circular	2702+68.87	A-9	J-A-9	74.03	73.68	1	0.00	4.50	351.34	0.10	61	16.01	3.80	81.51	81.42	81.90
L_L-B-1	Circular	2725+00.00	B-1	J-B-2	73.54	73.24	1	0.00	4.00	303.54	0.10	30	15.87	3.57	79.35	79.34	81.67
Link344	Rectangular		B-10	POND4D	70.93	70.86	1	8.00	5.00	73.00	0.10	232	16.61	6.63	79.34	79.26	81.79
L_L-B-2	Circular	2731+96.88	B-2	J-B-3	72.35	72.19	1	0.00	4.50	160.18	0.10	39	15.92	2.66	79.33	79.32	81.67
L_L-B-4	Circular	2735+00.00	B-4	J-B-3	73.15	72.79	1	0.00	3.00	142.94	0.25	18	16.00	2.58	79.32	79.32	81.17
Link345	Rectangular	2733+23.85	B-6	POND4D	71.91	71.57	1	6.00	5.00	70.00	0.49	172	16.01	9.18	79.27	79.26	81.47
Link323	Circular	2730+37.82	B-7A	POND4D	72.98	72.45	1	0.00	2.00	106.00	0.50	36	15.76	11.47	79.32	79.26	79.81
L-B-10	Rectangular	2729+00.29	B-8	B-10	71.16	70.93	1	8.00	5.00	225.00	0.10	232	16.62	6.59	79.59	79.34	81.09
L_L-B-9	Rectangular	2726+70.85	B-9	B-8	71.38	71.16	1	8.00	5.00	226.70	0.10	228	16.62	6.33	79.81	79.59	81.89
L_L-BNGL01	Circular	2753+59.67	BNGL01	BNGL02	68.04	67.96	1	0.00	4.00	63.40	0.13	88	15.76	7.86	75.94	75.89	77.83
L_L-BNGL03	Rectangular	2753+12.47	BNGL02	BNGL03	67.96	67.41	1	6.00	5.00	417.73	0.13	134	15.81	4.81	75.89	75.85	76.72
L-BNGL03	Rectangular	2755+15.41	BNGL03	MH-8	66.44	66.31	1	6.00	5.00	130.00	0.10	145	16.12	4.83	75.85	75.79	76.67
L-C-1	Circular	2743+00.00	C-1	C-2	72.51	72.38	1	0.00	3.00	134.53	0.10	20	15.80	2.74	79.28	79.28	78.51
L_L-C-2	Rectangular	2741+63.98	C-2	C-2a	72.38	72.11	1	3.00	3.00	268.46	0.10	29	15.76	3.22	79.28	79.26	78.91
L_L-C-2A	Rectangular	2738+96.03	C-2a	C-3	72.11	71.82	1	4.00	3.00	282.71	0.10	55	15.76	4.53	79.26	79.24	79.85
L-C-4A	Circular	2738+05.41	C-3	C-4a	71.37	70.86	1	0.00	4.00	340.00	0.15	61	15.76	4.82	79.24	79.22	80.76
L-C4	Circular	2736+07.66	C-4	C-4a	73.14	72.90	1	0.00	2.00	120.00	0.20	13	16.01	4.16	79.23	79.22	80.10
L-MHI-107	Circular	2735+39.56	C-4a	MHI-108	70.86	70.38	1	0.00	4.00	207.00	0.23	71	15.76	5.61	79.22	79.21	80.00
L_L-C-3	Circular	2737+00.00	C-6	C-3	75.16	75.05	1	0.00	2.00	105.93	0.10	6	15.77	3.12	79.24	79.24	80.15
L_L-J-A-5	Circular	2713+98.09	CNT-01	J-A-5	73.34	72.38	1	0.00	4.00	489.00	0.20	138	15.70	10.94	83.97	81.37	81.83
L_L-CNT-02	Circular	2733+47.73	CNT-02	J-B-3	72.19	72.18	1	0.00	4.00	4.00	0.25	107	16.01	8.49	79.36	79.32	80.50
L_L-D-2A	Circular	2749+26.77	D-1	D-2a	70.76	70.49	1	0.00	3.00	273.57	0.10	12	15.79	3.10	75.90	75.90	77.85
L_L-D-2	Circular	2755+00.00	D-2	BNGL02	70.06	69.87	1	0.00	3.00	187.92	0.10	21	16.01	2.97	75.90	75.89	76.19
L_L-BNGL02	Circular	2752+00.34	D-2a	BNGL02	69.99	69.87	1	0.00	3.50	112.13	0.10	29	15.80	3.80	75.90	75.89	76.49
L_L-D-3	Rectangular	2745+00.00	D-3	J-D-5	68.96	68.66	1	4.00	4.00	299.00	0.10	96	20.67	6.01	77.06	76.59	78.94
L_L-D-3A	Rectangular	2742+78.83	D-3a	D-3	69.19	68.96	1	4.00	4.00	221.17	0.10	96	20.67	6.00	77.40	77.06	80.05
L_L-D-5	Rectangular	2752+02.47	D-5	D-5A	68.26	67.97	1	4.00	4.00	287.53	0.10	108	20.09	7.02	76.09	75.87	77.98
L_L-D-5A	Rectangular	2754+90.00	D-5A	BNGL03	67.97	67.94	1	4.00	4.00	25.41	0.12	108	20.08	8.97	75.87	75.85	76.54
L_L-D-6	Circular	2757+47.22	D-6	J-D-6a	69.41	69.34	1	0.00	3.50	74.93	0.09	27	15.82	3.51	75.79	75.79	75.91
L_L-D-7	Circular	2759+08.16	D-7	D-6	70.07	69.91	1	0.00	3.00	160.94	0.10	14	15.82	3.55	75.79	75.79	76.47
L_L-A-11B	Circular	2712+02.10	J-A-10	A-11	73.10	72.92	1	0.00	5.00	182.63	0.10	98	16.01	5.00	81.32	81.28	82.83
L_L-J-A-12	Rectangular	2717+68.38	J-A-12	A-13	72.29	71.97	1	8.00	5.00	318.80	0.10	216	16.62	5.92	80.89	80.49	82.73
L_L-J-A-2	Rectangular	2709+00.55	J-A-2	A-3	73.65	73.35	1	6.00	4.00	299.45	0.10	74	16.01	3.08	81.41	81.40	82.38
L_L-A-11	Rectangular	2714+11.25	J-A-5	A-11	72.38	71.81	1	8.00	6.00	282.00	0.20	264	16.01	5.50	81.37	81.28	81.62
L_L-A-9	Circular	2699+56.78	J-A-8	A-9	74.34	74.03	1	0.00	4.50	312.00	0.10	32	16.01	2.03	81.76	81.51	82.69
L_L-A-10	Circular	2706+20.21	J-A-9	A-10	73.68	73.44	1	0.00	4.50	239.29	0.10	67	16.01	4.20	81.42	81.66	82.77
L_L-J-B-2	Circular	2728+03.54	J-B-2	B-2	73.24	72.85	1	0.00	4.00	393.29	0.10	29	15.92	3.37	79.34	79.33	81.67
L_L-J-B-3	Rectangular	2733+57.06	J-B-3	B-6	72.18	71.91	1	6.00	5.00	279.55	0.10	164	16.00	6.85	79.32	79.27	81.65
L_L-J-D-5	Rectangular	2747+99.00	J-D-5	D-5	68.66	68.26	1	4.00	4.00	403.65	0.10	108	20.08	6.72	76.59	76.09	79.99
L_L-J-D-6A	Circular	2756+73.03	J-D-6a	MH-8	69.34	69.26	1	0.00	3.50	85.37	0.09	27	15.82	3.75	75.79	75.79	76.52
MH10-11	Circular		MH-10	MH-11	65.79	65.37	1	0.00	5.50	420.00	0.10	187	16.07	7.54	75.41	75.10	77.81

Table 11.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (10-Year) - Outfalls 17-19

Model: US290_SegA_BNGLHOL_Mit10-8-31-09.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 17-19																	
MH10-11	Circular		MH-10	MH-11	70.33	68.68	1	0.00	3.00	420.00	0.39	33	16.24	5.76	75.41	75.10	77.81
L-MH-11	**Circular**		**MH-11**	**E11504.3**	**65.37**	**65.16**	**1**	**0.00**	**5.50**	**210.00**	**0.10**	**251**	**16.03**	**10.71**	**75.10**	**74.88**	**75.27**
L-MH-11	**Circular**		**MH-11**	**E11504.3**	**68.68**	**68.47**	**1**	**0.00**	**3.00**	**210.00**	**0.10**	**41**	**16.18**	**5.95**	**75.10**	**74.88**	**75.27**
L-MH-8	Circular	2756+19.68	MH-8	MH-9	66.31	66.13	1	0.00	5.50	180.00	0.10	148	16.11	6.20	75.79	75.67	77.12
L-MH-8	Circular	2756+19.68	MH-8	MH-9	71.42	70.94	1	0.00	2.00	49.07	0.98	20	16.08	6.59	75.79	75.67	77.12
MH9-10	Circular		MH-9	MH-10	66.13	65.79	1	0.00	5.50	340.00	0.10	187	16.08	7.82	75.67	75.41	77.19
MH9-10	Circular		MH-9	MH-10	70.94	70.33	1	0.00	3.00	340.00	0.18	32	16.24	5.12	75.67	75.41	77.19
L-MHI-108	Rectangular		MHI-108	MHI-109	70.38	69.55	1	7.00	5.00	600.00	0.14	75	15.99	2.15	79.21	79.21	80.00
Link339	Rectangular		MHI-108	POND4A	70.38	70.18	1	8.00	4.00	204.00	0.10	379	16.48	11.79	79.21	79.00	80.00
E11504_2	**Rectangular**		**MHI-109**	**E11504.2**	**69.55**	**69.52**	**1**	**7.00**	**5.00**	**30.00**	**0.10**	**80**	**15.99**	**2.27**	**79.21**	**81.09**	**80.80**
Link342	Rectangular		Node386	A102	71.79	71.38	1	8.00	5.00	375.00	0.11	263	16.01	6.57	81.28	81.30	82.19
Link340	Rectangular		POND4A	D-3a	70.18	69.19	1	4.00	3.00	440.00	0.23	96	20.67	7.96	79.00	77.40	82.00
L-POND4B	Rectangular		POND4B	J-D-5	69.21	68.97	1	4.00	4.00	73.00	0.33	-45	16.52	0.86	76.59	76.59	82.00
Link322	Rectangular		POND4D	MHI-108	70.46	70.38	1	8.00	6.00	78.00	0.10	349	16.01	7.26	79.26	79.21	82.50

Table 12.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (10-Year) - Outfalls 20-22

Model: US290_SegA_Sys_BKHSEW43_Mit10-adjust-wat.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 20-22																	
E115-01.1	**Natural**	**2811+67.66**	**BRCKH01.0**	**BRCKH00.1**	**51.24**	**50.96**	**1**	**0.00**	**0.00**	**114.20**	**0.25**	**5926**	**17.87**	**9.80**	**67.55**	**67.53**	**70.74**
E115-02	Natural	2810+75.92	BRCKH01.1	BRCKH01.0	51.27	51.24	1	0.00	0.00	307.00	0.01	5400	17.86	8.12	**67.90**	67.55	71.00
E115-01.3	Natural		BRCKH01.3	BRCKHO1.2	51.58	51.39	1	0.00	0.00	254.70	0.07	4504	17.76	6.39	68.74	68.10	72.20
E115-03.1	Natural		BRCKHO1.2	BRCKH01.1	51.39	51.27	1	0.00	0.00	151.00	0.08	5398	17.86	7.69	68.10	67.90	72.80
L_L-COH01	Circular	2799+14.15	COH01	F-2a	62.14	61.80	1	0.00	4.00	172.06	0.20	116	16.25	9.17	68.44	68.23	68.02
Link52	Rectangular	2832+53.36	DET-4C	J-H-4a	57.20	57.09	1	5.00	5.00	108.66	0.10	-221	16.28	5.42	68.65	68.65	72.50
L_L-E-1	Circular	2765+99.87	E-1	E-2	66.87	66.47	1	0.00	4.00	400.13	0.10	40	16.02	3.60	70.22	69.93	74.44
L_L-E-10	Rectangular	2786+12.18	E-10	E-11	64.05	63.87	1	6.00	4.00	187.82	0.10	116	16.04	6.70	68.51	68.52	71.93
L_L-E-11	**Rectangular**	**2788+00.00**	**E-11**	**E11504.4**	**63.87**	**63.80**	**1**	**6.00**	**4.00**	**63.67**	**0.11**	**128**	**16.04**	**8.22**	**68.52**	**68.52**	**71.27**
Link71	Natural		E11504.3	E11504.4	58.48	58.33	1	0.00	0.00	200.00	0.07	979	18.45	6.42	68.63	68.52	75.23
Link77	Natural	2788+44.73	E11504.4	E11504.5	58.33	58.02	1	0.00	0.00	600.00	0.05	963	18.45	7.29	68.52	68.22	75.16
Link75	Natural		E11504.5	E11504.6	58.01	58.02	1	0.00	0.00	42.50	-0.02	968	18.44	7.13	68.22	68.21	75.16
Link74	Natural		E11504.6	E11504.7	58.02	57.34	1	0.00	0.00	428.00	0.16	971	18.44	7.21	68.21	68.16	72.62
Link73	Natural		E11504.7	E11504.8	57.35	57.23	1	0.00	0.00	63.75	0.19	973	18.44	7.29	68.16	68.15	72.61
Link72	Natural		E11504.8	BRCKHO1.2	57.23	55.83	1	0.00	0.00	778.00	0.18	977	18.44	7.09	68.15	68.10	73.29
L_L-E-1a	Circular	2761+99.46	E-1a	E-1	68.27	67.87	1	0.00	3.00	400.41	0.10	18	16.01	3.06	70.54	70.22	75.84
L_L-E-2	Rectangular	2770+00.00	E-2	J-E-2	66.47	66.20	1	4.00	4.00	272.32	0.10	68	16.01	5.11	69.93	69.53	74.53
L_L-E-3	Rectangular	2776+64.05	E-3	E-4	65.39	65.00	1	5.00	4.00	385.95	0.10	93	16.03	5.62	68.84	68.48	72.81
L_L-E-4	Rectangular	2780+50.00	E-4	E-4a	65.00	64.86	1	6.00	4.00	139.77	0.10	73	15.72	5.67	68.48	68.48	72.11
Link81	Rectangular	2780+50.00	E-4	E-9	65.00	64.82	1	5.00	4.00	325.29	0.06	56	16.29	3.49	68.48	68.50	72.11
L_L-E-4a	Rectangular	2781+89.77	E-4a	E-5	62.09	61.88	1	7.00	5.00	210.23	0.10	194	16.03	5.55	68.48	68.44	71.86
L_L-E-5	Rectangular	2784+00.00	E-5	J-E-5	61.88	61.48	1	7.00	5.00	399.86	0.10	220	16.00	6.28	68.44	68.38	71.48
L_L-E-6	Circular	2766+67.46	E-6	E-7a	67.00	66.66	1	0.00	3.00	344.00	0.10	20	16.01	3.64	69.16	68.74	76.01
L_L-E-7	Circular	2773+53.94	E-7	E-8	65.32	65.02	1	0.00	4.00	296.06	0.10	36	16.02	3.69	68.50	68.50	74.09
L_L-E-7a	Circular	2770+11.46	E-7a	E-7	66.16	65.82	1	0.00	3.50	342.48	0.10	28	16.02	3.88	68.74	68.50	74.53
L_L-E-8	Rectangular	2776+50.00	E-8	E-9	65.02	64.82	1	5.00	4.00	200.00	0.10	50	15.91	3.47	68.50	68.50	72.77
L_L-E-9	Rectangular	2778+50.00	E-9	J-E-9	64.82	64.42	1	6.00	4.00	393.82	0.10	109	16.03	5.50	68.50	68.51	72.10
L_L-F-1	Rectangular	2794+00.00	F-1	F-2a	60.88	60.36	1	7.00	5.00	517.51	0.10	244	15.98	7.01	68.31	68.23	69.54
L_L-F-1a	Rectangular	2792+16.33	F-1a	F-1	61.06	60.88	1	7.00	5.00	183.67	0.10	231	16.00	6.60	68.33	68.31	70.24
L_L-F-2	Rectangular	2800+00.00	F-2	J-F-3	60.28	59.98	1	9.00	5.00	300.08	0.10	292	15.97	7.10	68.19	68.02	69.36
L_L-F-2a	Rectangular	2799+17.51	F-2a	F-2	60.36	60.28	1	9.00	5.00	82.49	0.10	276	15.97	6.66	68.23	68.19	69.36
Link78	Circular	2799+17.51	F-2a	J-F-5	61.80	61.21	1	0.00	4.00	295.00	0.20	136	16.63	10.89	68.23	68.97	69.36
L_L-F-3	Rectangular	2807+00.00	F-3	BRCKH01.0	59.58	59.11	1	9.00	5.00	467.66	0.10	314	15.94	8.54	67.80	67.55	69.36
L_L-F-4	Circular	2793+86.99	F-4	F-5	63.99	63.67	1	0.00	3.00	313.01	0.10	7	16.01	3.01	68.97	68.97	71.06
L_L-F-5	Circular	2797+00.00	F-5	J-F-5	62.68	62.55	1	0.00	4.00	126.23	0.10	27	16.01	5.04	68.97	68.97	69.67
L_L-F-6	Circular	2806+00.00	F-6	J-F-6	62.92	62.52	1	0.00	3.50	400.15	0.10	21	16.01	3.77	68.97	68.97	69.42
Link76	Circular	2806+00.00	F-6	BRCKH01.1	0.05	0.00	1	0.00	0.05	10.00	0.50	0	0.00	0.00	0.00	0.00	69.42
L_L-G-1	Rectangular	2825+00.00	G-1	G-1a	58.51	58.29	1	7.00	5.00	217.95	0.10	109	17.22	4.32	68.09	67.99	69.36
L_L-G-1a	Rectangular	2822+82.05	G-1a	J-G-1a	58.29	57.91	1	7.00	5.00	382.65	0.10	110	17.21	4.54	67.99	67.83	69.36
L_L-G-1b	Rectangular	2815+19.46	G-1b	BRCKH01.0	54.11	53.76	1	10.00	10.00	351.81	0.10	462	17.21	4.61	67.68	67.55	69.36
L_L-G-2	Rectangular	2827+50.00	G-2	G-1	58.76	58.51	1	7.00	5.00	250.34	0.10	108	17.23	3.96	68.20	68.09	69.36
L_L-G-2a	Rectangular	2830+56.00	G-2a	G-2	59.07	58.76	1	7.00	5.00	306.00	0.10	107	17.25	3.57	68.33	68.20	69.36
L_L-G-3	Rectangular	2845+64.61	G-3	J-G-3	60.57	60.11	1	7.00	5.00	463.93	0.10	241	16.03	7.76	68.91	68.73	69.36
L_L-H-5a	Rectangular	2838+00.00	G-3a	J-H-5	59.81	58.00	1	8.00	5.00	280.34	0.65	243	16.17	8.85	68.64	68.64	70.03
Link79	Rectangular	2838+00.00	G-3a	MH-12s	59.81	59.59	1	7.00	5.00	220.36	0.10	104	17.27	3.03	68.64	68.55	70.03
L_L-G-4	Rectangular	2849+00.00	G-4	G-3	60.90	60.57	1	7.00	5.00	335.39	0.10	225	16.03	6.74	69.06	68.91	69.36
L_L-G-5	Circular	2852+50.00	G-5	G-5a	62.74	62.59	1	0.00	3.50	150.48	0.10	20	16.01	2.35	69.10	69.10	69.36
L_L-G-5a	Circular	2851+00.00	G-5a	G-5b	62.59	62.50	1	0.00	3.50	93.16	0.10	23	16.01	2.63	69.10	69.10	69.36
L_L-G-5b	Rectangular	2850+06.84	G-5b	G-4	61.00	60.90	1	7.00	5.00	106.84	0.09	211	16.03	6.26	69.10	69.06	69.36
L_L-H-1	Rectangular	2814+00.00	H-1	G-1b	54.43	54.11	1	9.00	9.00	296.32	0.11	350	17.22	4.31	67.81	67.68	69.42
L_L-H-2	Rectangular	2824+00.00	H-2	J-H-2	55.44	55.24	1	9.00	8.00	196.75	0.10	348	17.23	4.82	68.44	68.32	69.36
L_L-H-3	Rectangular	2828+50.00	H-3	H-3b	56.71	56.55	1	8.00	5.00	162.00	0.10	-209	16.28	4.12	68.64	68.63	69.36
L_L-H-3a	Rectangular	2826+30.00	H-3a	H-2	55.67	55.44	1	9.00	8.00	230.00	0.10	347	17.24	4.80	68.59	68.44	69.36
L_L-H-3b	Rectangular	2826+88.00	H-3b	H-3a	55.73	55.67	1	9.00	8.00	59.41	0.10	346	17.24	4.80	68.63	68.59	69.36
L_L-H-4a	Rectangular	2831+18.34	H-4a	H-3	56.97	56.70	1	8.00	5.00	268.30	0.10	-215	16.28	3.81	68.64	68.64	69.36
L_L-H-5	Circular	2840+70.00	H-5	J-H-5	59.40	59.01	1	0.00	5.00	397.64	0.10	60	15.81	5.06	68.65	68.64	69.36

Table 12.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/ Mitigation (10-Year) - Outfalls 20-22

Model: US290_SegA_Sys_BKHSEW43_Mit10-adjust-wat.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 20-22																	
L_L-H-7	Circular	2845+70.00	H-7	J-H-7	60.89	60.69	1	0.00	4.00	202.30	0.10	48	15.83	5.76	68.65	68.65	69.36
L_L-H-8	Circular	2848+00.00	H-8	H-7	61.62	61.39	1	0.00	3.50	230.00	0.10	30	15.83	4.61	68.65	68.65	69.36
L_L-H-9	Circular	2852+94.91	H-9	H-8	62.11	61.62	1	0.00	3.50	492.91	0.10	10	16.01	1.74	68.65	68.65	69.36
L_LJ-E-2	Rectangular	2772+72.32	J-E-2	E-3	66.20	65.81	1	4.00	4.00	391.73	0.10	68	16.03	5.40	69.53	68.84	74.38
L_LJ-E-5	Rectangular	2787+99.86	J-E-5	F-1a	61.48	61.06	1	7.00	5.00	416.47	0.10	220	16.00	6.28	68.38	68.33	71.82
L_L-E-515	**Circular**	**2798+26.51**	**JE5150100**	**E5150100**	**56.59**	**56.43**	**1**	**0.00**	**4.50**	**82.00**	**0.20**	**150**	**16.60**	**10.27**	**69.89**	**70.00**	**70.39**
L_LJ-E-9	Rectangular	2782+43.83	J-E-9	E-10	64.42	64.05	1	6.00	4.00	368.29	0.10	109	16.04	5.78	68.51	68.51	72.77
L_LJ-F-3	Rectangular	2803+00.08	J-F-3	F-3	59.98	59.58	1	9.00	5.00	399.92	0.10	291	15.96	7.36	68.02	67.80	69.69
L_LJ-F-5	Circular	2798+26.23	J-F-5	JE5150100	56.65	56.59	1	0.00	2.50	31.40	0.20	150	16.60	30.25	68.97	69.89	70.12
L_LJ-F-6	Circular	2801+99.85	J-F-6	J-F-5	62.52	62.12	1	0.00	3.50	373.62	0.11	20	16.02	4.19	68.97	68.97	71.42
L_L-JG-1a	Rectangular	2818+99.40	J-G-1a	G-1b	57.91	57.53	1	7.00	5.00	379.94	0.10	110	17.21	4.27	67.83	67.68	69.56
L_LJ-G-3	Rectangular	2841+00.59	J-G-3	G-3a	60.11	59.81	1	7.00	5.00	300.54	0.10	237	16.04	9.36	68.73	68.64	71.08
L_LJ-G-3a	Rectangular	2834+13.32	J-G-3a	G-2a	59.42	59.07	1	7.00	5.00	357.48	0.10	106	17.26	3.45	68.48	68.33	70.75
L_LJ-H-1a	Rectangular	2818+06.46	J-H-1	H-1	54.84	54.43	1	9.00	8.00	406.46	0.10	348	17.23	4.82	68.06	67.81	71.46
L_LJ-H-1	Rectangular	2822+03.34	J-H-2	J-H-1	55.24	54.84	1	9.00	8.00	396.95	0.10	348	17.23	4.82	68.32	68.06	70.27
L_L-J-H-4A	Rectangular	2832+43.53	J-H-4a	H-4a	57.10	56.97	1	8.00	5.00	125.18	0.10	-221	16.28	3.78	68.65	68.64	69.98
Link1	Rectangular	2835+19.36	J-H-4b	DET-4C	57.85	57.74	1	8.00	5.00	107.58	0.10	284	16.17	9.22	68.65	68.65	71.18
L_LJ-H-5	Rectangular	2836+72.36	J-H-5	J-H-4b	58.00	57.85	1	8.00	5.00	152.98	0.10	284	16.17	8.49	68.64	68.65	70.57
L_LJ-H-7	Circular	2843+67.70	J-H-7	H-5	60.19	59.90	1	0.00	4.50	297.70	0.10	48	15.83	4.92	68.65	68.65	69.36
L_L-MH-12s	Rectangular	2835+79.64	MH-12s	J-G-3a	59.59	59.42	1	7.00	5.00	166.32	0.10	106	17.26	3.71	68.55	68.48	70.87
L_L-MH-14s	Circular	2781+98.83	MH-14s	E-4a	63.39	63.37	1	0.00	5.00	27.75	0.09	122	16.01	8.53	68.48	68.48	71.37
L_L-MH-18s	Circular	2851+44.26	MH-18s	G-5b	62.42	61.92	1	0.00	4.00	191.11	0.26	190	16.07	15.02	70.52	69.10	68.35
L_L-MH-7s	Circular	2828+96.25	MH-7s	H-3b	56.11	55.73	1	0.00	7.00	364.99	0.10	452	16.50	11.69	69.82	68.63	71.63
L_L-W43rd	Circular	2783+29.32	W43rd	MH-14s	63.74	63.39	1	0.00	5.00	173.87	0.20	122	16.01	7.82	68.59	68.48	72.57

Table 13.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (100-Year) - Outfalls 1-4

Model: 100YR_SegE_Prop.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 1-4																	
L-A-2	Rectangular	2123+99.96	A-1	EX-2	132.81	132.77	1.00	4.00	2.00	83.05	0.05	20	16.00	2.50	137.29	137.28	136.81
L-A-2	Trapezoidal	2123+99.96	A-1	EX-2	136.31	136.80	1.00	15.00	0.50	83.05	-0.59	4	16.15	1.11	137.29	137.28	136.81
L-A-32	Circular	2132+49.96	A-10	MH-1	131.39	131.16	1.00	0.00	3.00	229.95	0.10	25	15.89	3.63	137.36	137.12	136.42
L-A-32	Trapezoidal	2132+49.96	A-10	MH-1	135.50	137.00	1.00	0.00	0.50	229.95	-0.65	0	16.51	0.70	137.36	137.20	136.42
L-A-35	Circular	2136+20.00	A-11	MH-2	132.62	132.44	1.00	0.00	1.50	64.27	0.28	13	15.92	7.14	137.17	136.92	137.07
L-A-36	Circular	2139+20.00	A-12	EX-8	132.24	132.09	1.00	0.00	1.50	53.88	0.28	10	15.92	5.62	136.76	136.66	136.80
L-A-40	Rectangular	2143+99.94	A-13	MH-4	130.05	129.86	1.00	6.00	3.00	151.27	0.13	110	15.91	6.09	136.23	136.79	135.42
L-A-39	Circular	2142+20.00	A-14	MH-3	131.86	131.70	1.00	0.00	1.50	56.75	0.28	16	15.92	8.85	136.66	136.28	136.46
L-A-42	Circular	2145+20.00	A-15	MH-4	131.52	131.36	1.00	0.00	1.50	56.88	0.28	13	15.92	7.43	136.31	136.79	136.16
L-A-43	Circular	2148+20.00	A-16	MH-5	131.13	130.97	1.00	0.00	1.50	56.88	0.28	23	15.91	12.65	135.97	136.79	135.82
L-A-45	Rectangular	2152+99.93	A-17	A-18	127.67	127.02	1.00	6.00	4.00	650.00	0.10	123	15.93	5.10	135.01	134.57	134.37
L-A-46	Rectangular	2159+49.93	A-18	A-19	127.02	126.42	1.00	6.00	4.00	600.00	0.10	128	15.92	5.31	134.57	133.74	134.20
L-A-47	Rectangular	2165+49.93	A-19	A-20	126.42	125.72	1.00	6.00	4.00	700.00	0.10	126	15.96	5.24	133.74	133.29	133.30
L-A-4	Rectangular	2126+99.96	A-2	EX-3	132.66	132.60	1.00	4.00	2.00	86.07	0.07	55	17.23	6.81	137.25	137.23	136.51
L-A-4	Trapezoidal	2126+99.96	A-2	EX-3	136.01	136.27	1.00	22.50	0.50	86.07	-0.30	15	15.98	1.38	137.25	137.23	136.51
L-A-48	Rectangular	2172+49.93	A-20	A-27	125.72	124.49	1.00	6.00	4.00	950.00	0.13	130	15.96	5.39	133.29	132.07	132.95
L-A-50	Circular	2160+00.00	A-21	A-22	129.50	128.89	1.00	0.00	2.50	518.74	0.12	15	16.25	3.02	133.77	133.12	134.50
L-A-51	Circular	2165+18.74	A-22	EX-9	128.89	128.51	1.00	0.00	2.50	130.07	0.29	38	16.31	7.67	133.12	133.51	132.50
L-A-14	Rectangular	2170+00.00	A-23	EX-10	128.18	127.94	1.00	6.00	3.00	228.31	0.11	51	16.30	3.52	132.95	133.17	133.00
L-A-16	Rectangular	2177+18.74	A-24	EX-11	127.47	127.33	1.00	6.00	3.00	136.16	0.10	57	16.27	3.66	132.37	132.13	134.30
L-A-18	Rectangular	2180+42.96	A-25	EX-12	127.16	127.06	1.00	6.00	3.00	116.71	0.09	63	16.05	4.42	131.74	131.68	134.31
L-A-20	Rectangular	2183+22.96	A-26	EX-13	125.29	123.00	1.00	6.00	3.00	215.39	1.06	68	16.03	3.76	131.67	130.90	133.64
L-A-49	Rectangular	2181+99.93	A-27	A-28	124.49	123.79	1.00	6.00	4.00	400.68	0.17	144	15.95	5.97	132.07	130.78	132.07
L-A-95	Rectangular	2186+00.59	A-28	MH-13	122.79	122.77	2.00	5.00	5.00	12.00	0.17	416	16.26	8.29	130.78	130.57	131.47
L-A-58	Circular	2186+99.93	A-29	A-28	123.14	123.04	1.00	0.00	4.00	99.42	0.10	42	15.76	3.97	130.80	130.74	131.17
L-A-7	Rectangular	2130+99.96	A-3	EX-5	132.45	132.38	1.00	5.00	2.00	85.76	0.08	56	17.22	5.62	137.17	137.15	136.45
L-A-7	Trapezoidal	2130+99.96	A-3	EX-5	135.95	136.42	1.00	38.00	0.50	150.00	-0.31	14	16.95	0.89	137.17	137.15	136.45
L-A-93	Rectangular	2185+67.90	A-30	EX-14	122.88	122.87	2.00	5.00	5.00	10.99	0.09	183	16.26	3.66	130.77	130.86	130.00
L-A-56	Circular	2192+99.90	A-31	MH-8	123.74	123.44	1.00	0.00	4.00	299.52	0.10	36	15.76	3.51	131.01	130.92	130.87
L-A-23	Circular	2192+45.28	A-32	EX-18	124.10	123.85	1.00	0.00	3.50	178.37	0.14	27	16.26	2.76	131.19	131.06	131.75
L-A-27	Circular	2194+46.98	A-33	A-32	124.39	124.10	1.00	0.00	3.50	200.36	0.14	26	16.25	2.65	131.32	131.19	133.55
L-A-54	Circular	2197+99.87	A-34	MH-7	124.23	123.97	1.00	0.00	3.50	263.57	0.10	31	15.76	3.52	131.32	131.15	130.77
L-A-52	Circular	2203+99.84	A-35	MH-6	125.00	124.56	1.00	0.00	2.50	339.95	0.13	17	18.22	3.38	131.58	131.54	129.54
L-A-52	Trapezoidal	2203+99.84	A-35	MH-6	129.04	130.61	1.00	26.00	0.50	339.95	-0.46	10	17.04	1.68	131.58	131.54	129.54
L-A-61	Circular	2197+75.87	A-36	A-34	125.27	125.23	1.00	0.00	2.50	40.99	0.10	17	16.00	3.43	131.34	131.32	132.00
L-A-60	Circular	2200+59.70	A-37	A-36	126.06	125.77	1.00	0.00	2.00	287.37	0.10	10	16.01	3.28	131.64	131.34	131.90
L-A-59	Circular	2203+43.32	A-38	A-37	126.85	126.56	1.00	0.00	1.50	287.16	0.10	4	15.75	2.42	131.92	131.64	133.00
L-A-62	Circular	2123+74.32	A-39	A-40	135.50	134.94	1.00	0.00	1.50	190.00	0.29	4	15.89	2.58	139.86	139.83	140.00
L-A-62	Trapezoidal	2123+74.32	A-39	A-40	138.68	138.49	1.00	5.00	0.50	190.00	0.10	1	16.19	0.34	139.86	139.83	140.00
L-A-9	Rectangular	2133+99.95	A-4	EX-6	132.21	132.11	1.00	5.00	2.00	82.87	0.12	52	17.21	5.14	137.13	137.22	136.45
L-A-63	Circular	2125+64.32	A-40	A-41	134.94	134.35	1.00	0.00	1.50	200.20	0.29	6	15.85	3.89	139.83	139.73	140.00
L-A-63	Trapezoidal	2125+64.32	A-40	A-41	138.49	138.00	1.00	5.00	0.50	200.20	0.24	2	16.26	0.62	139.83	139.73	140.00
L-A-64	Circular	2127+64.32	A-41	A-42	133.85	133.28	1.00	0.00	2.00	200.20	0.28	11	15.85	4.10	139.73	139.58	138.50
L-A-65	Circular	2129+64.32	A-42	A-43	133.28	132.39	1.00	0.00	2.00	299.43	0.30	13	15.84	4.59	139.58	138.84	139.75
L-A-66	Circular	2132+63.53	A-43	A-44	131.90	131.35	1.00	0.00	2.50	277.61	0.20	19	15.84	4.40	138.84	138.45	137.50
L-A-67	Circular	2135+40.00	A-44	MH-9	130.85	130.79	1.00	0.00	3.00	45.00	0.13	28	15.84	4.29	138.45	138.38	137.00
L-A-69	Circular	2141+00.00	A-45	A-46	129.96	129.37	1.00	0.00	3.00	400.00	0.15	38	15.87	5.26	137.63	137.44	137.87
L-A-69	Trapezoidal	2141+00.00	A-45	A-46	137.37	135.77	1.00	36.00	0.50	400.00	0.40	11	16.78	1.08	137.63	137.44	137.87
L-A-72	Circular	2145+00.00	A-46	MH-10	128.87	128.71	1.00	0.00	3.50	164.47	0.10	54	17.83	5.59	137.44	137.42	136.27
L-A-72	Trapezoidal	2145+00.00	A-46	MH-10	135.77	136.34	1.00	38.00	0.50	164.47	-0.35	17	17.41	1.08	137.44	137.42	136.27
L-A-75	Circular	2150+00.00	A-47	A-48	127.88	127.28	1.00	0.00	4.00	600.00	0.10	63	15.86	4.96	137.31	136.68	135.92
L-A-76	Circular	2156+00.00	A-48	A-52	127.28	126.68	1.00	0.00	4.00	600.00	0.10	67	15.87	5.32	136.68	136.03	135.22
L-A-70	Circular	2143+00.00	A-49	A-50	132.02	130.86	1.00	0.00	1.50	400.00	0.29	9	15.85	4.83	139.26	137.54	137.97
L-A-70	Trapezoidal	2143+00.00	A-49	A-50	135.00	134.50	1.00	0.00	2.00	400.00	0.13	0	16.31	0.19	139.26	137.54	137.97
L-A-11	Rectangular	2137+49.94	A-5	EX-7	130.85	130.75	1.00	5.00	3.00	79.71	0.13	73	17.15	4.85	136.89	136.80	136.07

Table 13.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (100-Year) - Outfalls 1-4

Model: 100YR_SegE_Prop.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-A-73	Circular	2147+00.00	A-50	MH-10	129.86	129.71	1.00	0.00	2.50	54.00	0.28	32	16.25	6.42	137.54	137.42	137.60
L-A-71	Circular	2151+00.00	A-51	A-50	132.02	130.86	1.00	0.00	1.50	400.00	0.29	8	16.33	4.26	139.25	137.54	137.05
L-A-71	Trapezoidal	2151+00.00	A-51	A-50	135.00	134.50	1.00	0.00	2.00	400.00	0.13	0	16.33	0.18	139.25	137.54	137.05
L-A-78	Circular	2162+00.00	A-52	A-53	126.68	125.79	1.00	0.00	4.00	600.00	0.15	70	17.41	5.50	136.03	134.86	134.52
L-A-80	Circular	2168+00.00	A-53	E-8	125.79	125.17	1.00	0.00	4.00	414.73	0.15	80	16.79	6.35	134.86	133.66	134.52
L-A-82	Rectangular	2177+00.00	A-54	A-59	123.95	123.57	1.00	5.00	4.00	440.58	0.09	101	16.34	5.02	132.31	131.60	134.17
L-A-88	Circular	2186+00.00	A-55	MH-11	123.70	123.60	1.00	0.00	2.50	68.57	0.15	11	19.42	2.58	130.91	130.91	133.12
L-A-77	Circular	2162+35.58	A-56	A-52	128.23	128.18	1.00	0.00	2.50	35.00	0.14	44	17.86	8.95	136.08	136.03	132.00
L-A-79	Circular	2168+35.58	A-57	A-53	127.86	127.79	1.00	0.00	2.00	35.00	0.20	13	16.40	4.65	134.97	134.86	132.00
L-A-81	Circular	2177+35.58	A-58	A-54	126.00	125.95	1.00	0.00	2.50	35.00	0.14	22	16.28	4.56	132.39	132.31	132.00
L-A-83	Rectangular	2181+40.68	A-59	MH-11	123.57	123.23	1.00	5.00	4.00	390.97	0.09	106	16.28	5.29	131.60	130.91	134.65
L-A-28	Circular	2124+39.96	A-6	A-7	134.65	134.09	1.00	0.00	1.50	190.06	0.29	4	16.00	2.58	138.03	137.92	138.29
L-A-28	Trapezoidal	2124+39.96	A-6	A-7	137.79	136.98	1.00	0.00	0.50	190.06	0.43	0	16.36	0.31	138.03	137.92	138.29
L-A-90	Rectangular	2185+67.08	A-60	EX-15	123.17	123.02	2.00	5.00	5.00	102.50	0.15	113	16.29	2.25	130.90	130.86	131.00
L-A-86	Circular	2193+50.00	A-61	MH-12	125.69	124.97	1.00	0.00	2.00	363.08	0.20	11	19.44	3.62	130.75	130.80	132.59
L-A-84	Circular	2198+00.00	A-62	A-63	127.50	126.62	1.00	0.00	1.50	300.20	0.29	6	16.01	3.52	130.73	130.65	131.02
L-A-85	Circular	2195+00.00	A-63	A-61	126.62	126.18	1.00	0.00	1.50	150.18	0.29	-11	16.00	5.89	130.65	130.75	132.07
L-A-29	Circular	2126+29.95	A-7	A-8	134.09	133.50	1.00	0.00	1.50	200.07	0.29	6	15.92	3.82	137.92	137.89	139.00
L-A-29	Trapezoidal	2126+29.95	A-7	A-8	136.98	136.00	1.00	5.00	1.00	200.07	0.49	4	16.30	0.74	137.92	137.89	139.00
L-A-30	Circular	2128+29.95	A-8	A-9	133.00	132.61	1.00	0.00	2.00	200.25	0.19	14	17.16	4.47	137.89	137.55	137.50
L-A-30	Trapezoidal	2128+29.95	A-8	A-9	136.00	137.00	1.00	0.00	0.50	200.25	-0.50	1	16.42	0.69	137.89	137.55	137.50
L-A-31	Circular	2130+29.95	A-9	A-10	132.11	131.89	1.00	0.00	2.50	218.51	0.10	18	17.16	3.75	137.55	137.36	139.00
L-A-31	Trapezoidal	2130+29.95	A-9	A-10	137.00	135.50	1.00	0.00	0.50	218.51	0.69	1	16.35	0.51	137.55	137.36	139.00
L-B-1	Circular	2203+00.00	B-1	B-2	126.98	126.25	1.00	0.00	1.50	250.02	0.29	8	18.64	4.34	129.47	129.79	130.67
OL-B-1	Trapezoidal	2203+00.00	B-1	B-3	130.17	126.80	1.00	100.00	0.50	200.00	1.69	0	0.00	0.00	129.47	129.79	130.67
L-B-19	Circular	2215+50.00	B-10	MH-17	124.50	123.80	1.00	0.00	2.00	242.88	0.29	15	16.95	4.59	130.21	129.35	127.50
L-B-24	Circular	2212+99.84	B-11	MH-18	123.00	122.95	1.00	0.00	3.00	48.55	0.10	26	17.29	4.24	129.34	129.30	129.91
L-B-26	Circular	2215+49.83	B-12	MH-19	122.85	122.69	1.00	0.00	1.50	57.22	0.28	8	16.98	4.26	129.19	129.19	127.89
L-B-26	Trapezoidal	2215+49.83	B-12	MH-19	127.39	128.47	1.00	100.00	0.50	57.22	-1.89	9	16.93	0.81	129.19	129.19	127.89
L-B-28	Circular	2217+63.59	B-13	MH-20	122.31	121.95	1.00	0.00	2.00	114.44	0.31	14	16.25	4.35	129.40	129.07	134.13
L-B-31	Circular	2226+61.23	B-14	MH-22	120.51	120.34	1.00	0.00	2.50	82.38	0.21	23	16.25	4.62	128.43	128.20	131.62
L-B-34	Circular	2237+42.45	B-15	MH-24	119.72	119.52	1.00	0.00	2.00	91.98	0.22	17	19.23	5.29	126.74	126.42	129.77
L-B-36	Circular	2219+23.88	B-16	B-17	122.27	121.98	1.00	0.00	2.00	138.10	0.21	3	15.71	1.63	126.46	126.45	128.27
L-B-37	Circular	2220+61.73	B-17	B-18	121.98	121.71	1.00	0.00	2.00	133.13	0.20	6	15.71	2.28	126.45	126.42	127.72
L-B-38	Circular	2221+94.66	B-18	B-19	121.21	120.94	1.00	0.00	2.50	136.19	0.20	8	15.72	2.05	126.42	126.40	127.19
L-B-39	Circular	2223+30.73	B-19	B-20	120.44	120.32	1.00	0.00	3.00	69.09	0.17	9	15.72	1.25	126.40	126.38	126.64
L-B-2	Circular	2205+50.00	B-2	MH-14	126.25	126.18	1.00	0.00	1.50	25.89	0.27	11	17.85	6.25	129.79	129.79	129.75
L-B-2	Trapezoidal	2205+50.00	B-2	MH-14	129.25	129.30	1.00	26.00	0.50	25.89	-0.19	-4	16.85	0.69	129.79	129.79	129.75
L-B-40	Circular	2223+99.80	B-20	B-21	120.32	120.11	1.00	0.00	3.00	149.31	0.14	12	15.72	1.60	126.38	126.36	126.36
L-B-41	Circular	2225+49.09	B-21	MH-25	120.11	119.94	1.00	0.00	3.00	107.21	0.16	13	15.72	1.87	126.36	126.34	126.81
L-B-43	Circular	2229+17.92	B-22	B-23	119.06	118.86	1.00	0.00	3.50	132.68	0.15	15	15.71	1.59	126.27	126.25	126.83
L-B-44	Circular	2230+51.50	B-23	B-24	118.86	118.66	1.00	0.00	3.50	124.85	0.16	17	15.71	1.78	126.25	126.23	126.36
L-B-45	Circular	2231+77.36	B-24	B-25	118.16	118.06	1.00	0.00	4.00	94.33	0.11	21	16.01	1.64	126.23	126.25	126.11
L-B-47	Circular	2232+71.79	B-25	B-27	118.06	117.83	1.00	0.00	4.00	234.81	0.10	27	16.06	2.15	126.25	126.26	126.44
L-B-46	Circular	2232+72.57	B-26	B-25	120.85	120.58	1.00	0.00	1.50	44.56	0.61	5	16.24	3.38	126.36	126.25	126.44
L-B-48	Circular	2235+06.59	B-27	MH-26	117.83	117.76	1.00	0.00	4.00	71.21	0.10	31	16.18	2.47	126.26	126.22	126.68
L-B-50	Circular	2237+15.12	B-28	MH-27	117.62	117.40	1.00	0.00	4.00	78.08	0.28	33	16.19	2.63	126.17	126.14	128.80
L-B-55	Circular	2239+99.76	B-29	MH-29	118.70	118.60	1.00	0.00	3.50	108.51	0.09	33	16.25	3.36	126.20	126.21	129.79
L-B-3	Circular	2205+75.55	B-3	MH-14	123.80	123.68	1.00	0.00	2.00	46.11	0.26	27	17.85	8.55	129.79	129.79	127.30
L-B-3	Trapezoidal	2205+75.55	B-3	MH-14	126.80	129.30	1.00	100.00	0.50	46.11	-5.42	13	17.51	0.64	129.79	129.79	127.30
L-B-54	Circular	2243+99.75	B-30	B-29	119.70	119.20	1.00	0.00	3.00	399.90	0.13	30	15.70	4.22	126.79	126.20	129.79
L-B-62	Rectangular	2238+57.26	B-31	MH-28	116.90	116.88	2.00	7.00	5.00	45.02	0.04	371	16.54	5.27	126.23	126.18	129.00
L-B-53	Circular	2248+51.07	B-32	B-30	120.15	119.70	1.00	0.00	3.00	451.71	0.10	22	15.70	3.08	127.14	126.79	127.28
L-B-56	Circular	2246+11.81	B-33	MH-30	120.74	119.80	1.00	0.00	2.50	313.78	0.30	4	16.24	1.61	126.36	126.34	129.00
L-B-63	Rectangular	2237+85.19	B-34	B-31	116.95	116.90	2.00	7.00	5.00	108.22	0.05	256	18.68	3.66	126.29	126.23	129.90
L-B-57	Circular	2242+55.19	B-35	MH-30	119.55	119.30	1.00	0.00	3.00	120.47	0.21	22	16.23	3.04	126.45	126.34	131.02
L-B-52	Circular	2254+89.69	B-36	B-32	121.60	120.65	1.00	0.00	2.50	639.00	0.15	16	17.41	3.26	127.71	127.14	126.11
L-B-5	Circular	2208+00.00	B-37	B-38	121.75	121.06	1.00	0.00	3.50	699.93	0.10	37	17.85	3.86	129.71	129.36	129.58
L-B-6	Circular	2215+00.00	B-38	B-39	121.06	120.71	1.00	0.00	3.50	349.63	0.10	45	17.84	4.67	129.36	129.23	130.15

Table 13.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (100-Year) - Outfalls 1-4

Model: 100YR_SegE_Prop.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-B-6	Trapezoidal	2215+00.00	B-38	B-39	128.73	127.50	1.00	26.00	0.50	349.63	0.35	16	17.17	1.29	129.36	129.23	130.15
L-B-7	Circular	2218+50.00	B-39	B-40	120.21	120.06	1.00	0.00	4.00	149.93	0.10	71	17.69	5.61	129.23	129.17	128.00
L-B-7	Trapezoidal	2218+50.00	B-39	B-40	127.50	128.03	1.00	26.00	0.50	149.93	-0.35	21	17.48	2.38	129.23	129.17	128.00
L-B-22	Circular	2206+49.84	B-4	B-5	124.75	124.62	1.00	0.00	2.50	87.78	0.15	28	17.28	5.74	130.39	130.39	129.39
L-B-22	Trapezoidal	2206+49.84	B-4	B-5	128.89	129.06	1.00	62.00	0.50	87.78	-0.19	17	16.98	1.33	130.39	130.39	129.39
L-B-8	Circular	2220+00.00	B-40	MH-15	120.06	119.76	1.00	0.00	4.00	299.54	0.10	77	17.56	6.05	129.17	129.50	129.50
L-B-10	Circular	2227+00.00	B-41	B-42	119.36	119.16	1.00	0.00	4.00	199.88	0.10	88	17.74	6.97	128.29	128.14	128.18
L-B-10	Trapezoidal	2227+00.00	B-41	B-42	127.68	126.98	1.00	26.00	0.50	199.88	0.35	24	16.93	1.94	128.29	128.14	128.18
L-B-12	Circular	2229+00.00	B-42	B-44	118.66	118.11	1.00	0.00	4.50	549.90	0.10	96	16.95	6.02	128.14	126.95	127.48
L-B-11	Circular	2229+00.00	B-43	B-42	122.50	122.36	1.00	0.00	2.00	49.00	0.29	28	17.75	8.98	128.40	128.14	126.50
L-B-13	Circular	2234+50.00	B-44	B-45	118.11	117.96	1.00	0.00	4.50	150.00	0.10	105	16.87	6.56	126.95	126.56	127.03
L-B-15	Circular	2236+00.00	B-45	MH-16	117.96	117.83	1.00	0.00	4.50	93.01	0.14	126	16.76	7.85	126.56	126.33	126.13
L-B-14	Circular	2236+00.00	B-46	B-45	121.00	120.90	1.00	0.00	2.00	49.00	0.20	27	19.14	8.98	126.68	126.56	125.00
L-B-87	Rectangular	2238+00.00	B-47	MH-16	117.12	117.02	1.00	5.00	5.00	107.15	0.09	206	19.28	8.24	126.83	126.33	126.83
L-B-93	Circular	2253+50.00	B-48	B-57	122.45	122.25	1.00	0.00	1.50	69.59	0.29	14	19.34	7.68	128.69	127.10	147.45
L-B-81	Circular	2250+50.00	B-49	MH-40	123.21	123.00	1.00	0.00	1.50	73.76	0.28	17	19.18	9.65	130.33	127.50	143.53
L-B-23	Circular	2207+37.62	B-5	B-11	124.62	123.50	1.00	0.00	2.50	562.35	0.20	25	17.28	4.99	130.39	129.34	130.50
L-B-92	Circular	2247+50.00	B-50	B-55	122.20	122.00	1.00	0.00	1.50	67.32	0.30	14	18.71	8.68	128.31	126.96	136.52
L-B-91	Circular	2244+52.35	B-51	B-54	123.15	123.00	1.00	0.00	1.50	55.53	0.27	13	18.86	8.97	128.50	126.86	130.55
L-B-90	Circular	2241+50.00	B-52	MH-42	124.38	124.25	1.00	0.00	1.50	48.28	0.27	-9	19.27	6.89	126.75	127.75	128.87
L-B-88	Circular	2239+25.37	B-53	MH-41	123.59	123.50	1.00	0.00	1.50	33.83	0.27	11	18.67	10.40	127.05	127.06	128.07
L-B-85	Rectangular	2244+00.40	B-54	MH-42	117.71	117.43	1.00	5.00	5.00	288.08	0.10	201	19.29	8.01	126.86	127.75	126.73
L-B-84	Rectangular	2246+50.00	B-55	B-54	117.96	117.71	1.00	5.00	5.00	249.44	0.10	191	19.29	7.63	126.96	126.86	125.78
L-B-84	Trapezoidal	2246+50.00	B-55	B-54	125.28	126.23	1.00	26.00	0.50	249.44	-0.38	18	16.93	2.23	126.96	126.86	125.78
L-B-83	Circular	2248+88.78	B-56	B-55	118.19	117.96	1.00	0.00	4.50	238.64	0.10	173	19.04	10.82	127.70	126.96	127.00
L-B-79	Circular	2252+70.00	B-57	MH-39	118.55	118.43	1.00	0.00	4.50	127.53	0.09	175	19.14	10.95	127.10	127.85	125.82
L-B-76	Circular	134+95.99	B-58	MH-37	118.70	118.68	1.00	0.00	4.50	30.20	0.07	125	19.26	7.87	127.12	127.65	127.20
L-B-75	Circular	133+95.00	B-59	B-58	118.80	118.70	1.00	0.00	4.00	101.07	0.10	99	19.64	7.89	127.12	127.12	127.00
L-B-75	Trapezoidal	133+95.00	B-59	B-58	125.04	125.50	1.00	100.00	0.50	101.07	-0.46	44	19.34	1.92	127.12	127.12	127.00
L-B-21	Circular	2210+40.78	B-6	MH-18	123.59	122.98	1.00	0.00	1.50	271.53	0.22	6	16.01	3.60	129.71	129.30	131.29
L-B-74	Circular	132+58.23	B-60	B-59	118.93	118.80	1.00	0.00	4.00	136.78	0.10	90	19.64	7.12	127.12	127.12	125.09
L-B-74	Trapezoidal	132+58.23	B-60	B-59	124.59	125.04	1.00	50.00	0.50	136.78	-0.33	35	19.09	1.54	127.12	127.12	125.09
L-B-73	Circular	131+55.11	B-61	B-60	119.00	118.93	1.00	0.00	4.00	103.43	0.07	141	19.61	11.20	127.12	127.12	125.71
L-B-72	Circular	129+60.43	B-62	B-61	119.24	119.00	1.00	0.00	3.50	195.84	0.12	81	19.60	8.33	127.12	127.12	125.14
L-B-70	Circular	128+19.55	B-63	MH-36	119.37	119.28	1.00	0.00	3.50	96.25	0.09	85	19.51	8.78	127.10	127.11	126.00
L-B-68	Circular	124+89.71	B-64	MH-35	119.75	119.58	1.00	0.00	3.00	117.70	0.14	34	19.54	4.84	126.97	127.04	125.50
Link749	Trapezoidal	124+89.71	B-64	Node755	0.05	0.00	1.00	0.00	0.05	10.00	0.50	43	16.59	0.00	##########	##########	125.50
L-B-66	Circular	123+16.86	B-65	MH-34	120.51	120.34	1.00	0.00	2.50	173.43	0.10	31	19.62	6.26	127.46	127.96	127.31
L-B-16	Circular	2208+45.57	B-7	B-8	126.81	126.61	1.00	0.00	1.50	200.00	0.10	4	16.01	2.13	129.98	129.83	130.32
L-B-17	Circular	2210+45.57	B-8	B-9	126.61	126.00	1.00	0.00	1.50	200.16	0.30	7	16.01	4.15	129.83	129.43	131.02
L-B-18	Circular	2212+45.57	B-9	MH-17	125.50	125.32	1.00	0.00	2.00	63.80	0.28	12	16.01	4.79	129.43	129.35	128.50
BF63-BF61	Natural		B-F63	Node458	123.30	123.26	1.00	5.00	5.10	40.00	0.10	4	15.57	2.14	126.64	126.64	128.91
BF63-BF65	Circular		B-F63	B-F65	123.30	123.00	3.00	0.00	2.50	90.00	0.33	139	17.12	9.42	126.64	125.50	128.91
BF63-BF65	Trapezoidal		B-F63	B-F65	128.41	128.41	1.00	100.00	0.50	92.00	0.00	0	0.00	0.00	125.50	125.50	128.91
L-C-8	Circular	142+00.00	C-1	C-3	121.00	120.50	1.00	0.00	2.00	500.13	0.10	10	16.55	3.25	125.44	124.89	125.08
L-C-5	Circular	157+00.00	C-10	C-12	117.86	117.36	1.00	0.00	3.50	500.01	0.10	54	16.67	5.57	124.26	123.02	124.50
L-C-13	Circular	162+00.27	C-11	C-13	116.36	115.81	1.00	0.00	4.00	553.84	0.10	60	16.26	4.77	122.06	120.74	124.50
L-C-6	Circular	162+00.00	C-12	C-14	117.36	116.70	1.00	0.00	3.50	553.95	0.12	69	16.45	7.11	123.02	120.52	124.50
L-C-14	Circular	167+53.42	C-13	C-14	115.81	115.70	1.00	0.00	4.00	86.00	0.13	76	16.26	5.91	120.74	120.52	125.27
L-C-7	Rectangular	167+53.31	C-14	C-15	114.37	114.27	1.00	5.00	5.00	129.44	0.08	160	16.26	6.40	120.52	120.41	125.27
D31-D33	Rectangular	168+82.59	C-15	D33	114.27	114.07	1.00	6.00	5.00	352.00	0.06	179	16.26	5.97	120.41	120.39	122.43
L-C-1	Circular	142+00.00	C-2	C-4	121.00	120.50	1.00	0.00	2.00	500.00	0.10	17	17.20	5.39	126.37	126.13	125.09
L-C-9	Circular	147+00.00	C-3	C-5	120.00	119.10	1.00	0.00	2.50	500.00	0.18	22	16.53	4.42	124.90	123.87	125.30
L-C-2	Circular	147+00.00	C-4	C-6	120.00	119.40	1.00	0.00	2.50	499.80	0.12	28	17.09	5.72	126.13	125.26	124.50
L-C-10	Circular	152+00.00	C-5	C-7	118.60	118.36	1.00	0.00	3.00	163.00	0.15	32	16.38	4.57	123.86	123.38	124.50
L-C-3	Circular	151+99.80	C-6	C-8	118.90	118.70	1.00	0.00	3.00	163.20	0.12	40	16.73	5.59	125.26	124.85	124.50
L-C-11	Circular	153+63.00	C-7	C-9	117.86	117.46	1.00	0.00	3.50	337.00	0.12	40	16.04	4.10	123.38	122.75	126.50
L-C-4	Circular	153+63.00	C-8	C-10	118.20	117.86	1.00	0.00	3.50	337.00	0.10	47	16.71	4.83	124.85	124.26	126.50
L-C-12	Circular	157+00.00	C-9	C-11	117.46	116.86	1.00	0.00	3.50	500.28	0.12	46	16.26	4.77	122.75	122.06	124.50
L-D-1	Circular	120+03.77	D-1	D-2	122.07	121.87	1.00	0.00	2.50	202.16	0.10	13	16.51	3.16	124.09	123.89	127.40

Table 13.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (100-Year) - Outfalls 1-4

Model: 100YR_SegE_Prop.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-D-6	Circular	107+10.26	D-10	D-12	119.21	118.98	1.00	0.00	4.00	234.61	0.10	56	16.29	4.91	122.61	122.25	128.37
L-D-13	Circular	107+10.00	D-11	MH-43	114.92	114.91	1.00	0.00	5.50	32.14	0.03	35	16.05	1.49	120.46	120.45	128.65
L-D-7	Circular	104+77.79	D-12	D-14	118.98	118.69	1.00	0.00	4.00	295.25	0.10	62	16.29	5.71	122.25	121.58	128.18
L-D-16	Circular	104+79.77	D-13	D-15	114.33	114.24	1.00	0.00	6.00	292.54	0.03	40	16.05	1.40	120.38	120.34	128.25
L-D-8	Circular	101+84.93	D-14	D-15	118.69	118.60	1.00	0.00	4.00	86.00	0.10	72	16.26	7.53	121.58	121.17	127.94
L-D-17	**Circular**	**101+84.93**	**D-15**	**D-17**	**114.24**	**114.19**	**1.00**	**0.00**	**6.00**	**169.57**	**0.03**	**114**	**16.05**	**4.01**	**120.34**	**120.19**	**127.94**
L-D-18	Circular	100+18.70	D-16	D-17	121.57	121.36	1.00	0.00	2.00	92.51	0.23	3	16.01	3.17	122.30	121.99	127.07
L-D-2	Circular	118+01.62	D-2	D-4	121.87	121.50	1.00	0.00	2.50	297.05	0.12	18	16.27	4.41	123.89	123.12	127.20
L-D-9	Circular	118+01.28	D-3	D-5	118.52	118.22	1.00	0.00	4.00	298.36	0.10	8	16.02	1.67	120.85	120.72	125.60
D32-D31	Circular		D32	C-15	116.63	116.28	1.00	0.00	2.50	71.00	0.49	12	15.99	3.97	120.97	120.41	122.43
D33-D35	Rectangular		D33	D35	114.07	113.90	1.00	6.00	5.00	258.00	0.07	197	16.26	6.56	120.38	119.55	122.71
D34-D33	Circular		D34	D33	117.79	116.59	1.00	0.00	2.00	71.00	1.69	10	16.01	6.54	119.87	120.38	123.04
D35-D37	**Rectangular**		**D35**	**D37**	**112.90**	**112.85**	**1.00**	**6.00**	**6.00**	**107.00**	**0.05**	**211**	**16.26**	**5.87**	**119.55**	**118.85**	**123.57**
D36-D35	Circular		D36	D35	118.77	116.92	1.00	0.00	1.50	71.00	2.61	9	16.18	8.80	119.77	119.55	123.57
D38-D36	Circular		D38	D36	120.50	119.50	1.00	0.00	1.50	73.00	1.37	4	16.01	6.16	121.08	120.08	123.50
L-D-3	Circular	115+04.60	D-4	D-6	120.00	119.66	1.00	0.00	4.00	342.19	0.10	27	16.27	2.51	123.12	123.01	127.00
L-D-10	Circular	115+02.93	D-5	D-7	118.22	117.88	1.00	0.00	4.00	340.52	0.10	18	16.03	2.81	120.72	120.55	126.85
L-D-4	Circular	111+62.95	D-6	D-8	119.66	119.46	1.00	0.00	4.00	204.56	0.10	39	16.28	3.47	123.01	122.87	126.64
L-D-11	Circular	111+62.66	D-7	D-9	115.88	115.52	1.00	0.00	5.00	205.63	0.18	27	16.05	1.42	120.55	120.52	126.77
L-D-5	Circular	109+58.73	D-8	D-10	119.46	119.21	1.00	0.00	4.00	250.39	0.10	47	16.29	4.15	122.87	122.61	126.51
L-D-12	Circular	109+58.93	D-9	D-11	115.52	115.42	1.00	0.00	5.00	247.58	0.04	31	16.05	1.60	120.52	120.46	128.88
Link740	Circular	2172+18.71	E-8	A-54	125.17	124.45	1.00	0.00	4.00	477.31	0.15	80	16.78	6.35	133.66	132.31	135.77
L-A-1	Rectangular	2123+38.35	EX-1	A-1	132.84	132.81	1.00	4.00	2.00	61.68	0.05	-15	15.93	0.81	137.29	137.29	138.33
L-A-1	Trapezoidal	2123+38.35	EX-1	A-1	136.86	136.31	1.00	15.00	0.50	61.68	0.89	1	17.01	0.50	137.29	137.29	138.33
L-A-15	Rectangular	2172+28.31	EX-10	A-24	127.94	127.47	1.00	6.00	3.00	490.43	0.10	51	16.30	3.24	133.17	132.37	133.20
L-A-17	Rectangular	2178+54.89	EX-11	A-25	127.33	127.16	1.00	6.00	3.00	188.09	0.09	58	16.03	3.63	132.13	131.74	134.26
L-A-19	Rectangular	2181+59.67	EX-12	A-26	127.06	125.29	1.00	6.00	3.00	163.30	1.08	63	16.05	5.67	131.68	131.67	133.75
L-A-21	Rectangular	2185+38.35	EX-13	EX-14	123.00	122.87	1.00	6.00	3.00	34.87	0.37	70	16.19	3.84	130.94	130.86	132.87
L-A-94	Rectangular	2185+68.27	EX-14	A-28	122.87	122.79	2.00	5.00	5.00	55.03	0.15	249	16.26	4.96	130.86	130.74	132.67
L-A-91	Rectangular	2185+67.08	EX-15	EX-19	123.02	122.89	2.00	5.00	5.00	87.33	0.15	124	16.27	2.48	130.88	130.85	134.40
L-A-26	Circular	2190+64.93	EX-16	EX-18	126.15	125.85	1.00	0.00	2.00	91.05	0.33	10	16.00	4.04	131.20	131.06	135.45
L-A-25	Circular	2195+54.30	EX-17	EX-20	124.69	124.55	1.00	0.00	3.00	91.84	0.15	18	16.48	2.55	131.43	131.36	137.31
L-A-22	Circular	2190+71.12	EX-18	EX-19	123.85	123.15	1.00	0.00	4.00	478.61	0.15	36	16.25	2.83	131.06	130.85	132.58
L-A-92	Rectangular	2185+67.55	EX-19	A-30	122.89	122.88	2.00	5.00	5.00	8.18	0.12	164	16.26	3.27	130.85	130.77	132.87
L-A-3	Rectangular	2124+82.97	EX-2	A-2	132.77	132.66	1.00	4.00	2.00	217.01	0.05	19	16.00	2.38	137.28	137.25	137.67
L-A-24	Circular	2195+55.99	EX-20	A-33	124.55	124.39	1.00	0.00	3.50	105.71	0.15	18	16.41	1.88	131.36	131.32	135.03
L-A-5	Rectangular	2127+85.97	EX-3	EX-4	132.60	132.48	1.00	5.00	2.00	270.90	0.04	39	17.23	3.97	137.23	137.17	137.52
L-A-5	Trapezoidal	2127+85.97	EX-3	EX-4	136.72	136.55	1.00	22.50	0.25	270.90	0.06	4	16.22	0.70	137.23	137.17	137.52
L-A-6	Rectangular	2130+56.87	EX-4	A-3	132.48	132.45	1.00	5.00	2.00	43.11	0.07	53	15.93	5.24	137.17	137.17	137.52
L-A-6	Trapezoidal	2130+56.87	EX-4	A-3	136.55	135.95	1.00	22.50	0.50	43.11	1.39	16	16.21	2.34	137.17	137.17	137.52
L-A-8	Rectangular	2131+85.55	EX-5	A-4	132.38	132.21	1.00	5.00	2.00	215.21	0.08	50	17.21	4.99	137.15	137.13	137.22
L-A-8	Trapezoidal	2131+85.55	EX-5	A-4	136.42	135.95	1.00	38.00	0.50	150.00	0.31	19	16.97	1.44	137.15	137.13	137.22
L-A-10	Rectangular	2134+82.74	EX-6	MH-2	131.11	130.94	1.00	5.00	3.00	173.21	0.10	68	17.16	4.52	137.22	136.92	137.22
L-A-12	Rectangular	2138+29.63	EX-7	EX-8	130.75	130.59	1.00	5.00	3.00	123.37	0.13	73	17.15	4.83	136.80	136.66	137.14
L-A-37	Rectangular	2139+52.95	EX-8	MH-3	130.59	130.20	1.00	5.00	3.00	298.68	0.13	74	17.12	5.14	136.66	136.28	137.14
L-A-13	Rectangular	2166+48.47	EX-9	A-23	128.51	128.18	1.00	6.00	3.00	351.53	0.09	38	16.04	2.87	133.51	132.95	134.00
L-A-33	Circular	2134+82.74	MH-1	EX-6	131.16	131.11	1.00	0.00	3.00	54.14	0.09	25	15.90	3.63	137.12	137.22	137.62
L-A-74	Circular	2146+64.42	MH-10	A-47	128.21	127.88	1.00	0.00	4.00	335.61	0.10	59	15.88	4.70	137.42	137.31	138.00
L-A-74	Trapezoidal	2146+64.42	MH-10	A-47	136.49	135.42	1.00	38.00	0.50	335.61	0.32	21	16.89	1.15	137.42	137.31	138.00
L-A-89	Rectangular	2185+31.55	MH-11	A-60	123.23	123.17	2.00	5.00	5.00	44.00	0.14	109	16.27	2.17	130.91	130.90	133.36
L-A-87	Circular	2189+87.46	MH-12	A-55	124.97	124.20	1.00	0.00	2.00	387.99	0.20	11	19.42	3.72	130.80	130.91	133.68
E100	**Natural**	**2186+00.59**	**MH-13**	**E100-OUT**	**122.77**	**122.07**	**1.00**	**0.00**	**0.00**	**1206.00**	**0.06**	**402**	**16.48**	**2.40**	**130.57**	**130.11**	**146.49**
L-B-4	Circular	2205+75.55	MH-14	B-37	123.18	122.75	1.00	0.00	2.50	224.51	0.19	30	18.29	6.17	129.79	129.71	131.00
L-B-9	Circular	2223+00.00	MH-15	B-41	119.76	119.36	1.00	0.00	4.00	399.21	0.10	69	17.69	5.48	129.50	128.29	129.50
L-B-64	Rectangular	2236+92.92	MH-16	B-34	117.02	116.95	2.00	7.00	5.00	152.81	0.05	253	18.68	3.61	126.33	126.26	126.37
L-B-20	Circular	2213+09.24	MH-17	MH-18	120.80	120.48	1.00	0.00	4.00	223.24	0.14	23	17.26	2.61	129.35	129.30	130.55
L-B-25	Circular	2213+12.52	MH-18	MH-19	119.98	119.69	1.00	0.00	4.50	198.54	0.15	49	16.06	3.09	129.30	129.19	130.00
L-B-27	Circular	2215+13.89	MH-19	MH-20	119.69	119.44	1.00	0.00	4.50	205.31	0.12	57	16.91	3.54	129.19	129.07	131.71
L-A-34	Rectangular	2136+56.22	MH-2	A-5	130.94	130.85	1.00	5.00	3.00	93.59	0.10	69	17.16	4.62	136.92	136.89	137.22
L-A-34	Trapezoidal	2136+56.22	MH-2	A-5	135.80	135.57	1.00	38.00	0.50	93.59	0.25	26	17.03	1.59	136.92	136.89	137.22
L-B-29	Circular	2217+19.58	MH-20	MH-21	119.44	118.96	1.00	0.00	4.50	384.54	0.12	64	16.76	4.00	129.07	128.72	128.36

Table 13.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (100-Year) - Outfalls 1-4

Model: 100YR_SegE_Prop.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-B-30	Circular	2221+29.13	MH-21	MH-22	118.96	118.34	1.00	0.00	4.50	542.05	0.11	64	16.75	4.00	128.72	128.20	133.76
L-B-32	Circular	2226+58.23	MH-22	MH-23	118.34	117.73	1.00	0.00	4.50	509.68	0.12	82	16.50	5.14	128.20	127.34	133.38
L-B-33	Circular	2231+81.08	MH-23	MH-24	117.73	117.02	1.00	0.00	4.50	605.28	0.12	82	16.49	5.14	127.34	126.42	128.70
L-B-35	Circular	2237+86.60	MH-24	B-31	117.02	116.95	1.00	0.00	4.50	71.00	0.10	97	16.50	6.08	126.42	126.23	129.65
L-B-42	Circular	2226+56.48	MH-25	B-22	119.94	119.56	1.00	0.00	3.00	260.29	0.15	14	15.71	1.93	126.34	126.27	126.85
L-B-49	Circular	2235+77.80	MH-26	B-28	117.76	117.62	1.00	0.00	4.00	137.32	0.10	31	16.20	2.47	126.22	126.17	126.96
L-B-51	Circular	2237+93.19	MH-27	MH-28	117.40	117.27	1.00	0.00	4.00	81.35	0.16	33	16.16	2.62	126.13	126.18	130.21
L-B-61	Rectangular	2238+74.53	MH-28	MH-29	116.88	116.85	2.00	7.00	5.00	43.45	0.07	396	16.51	5.64	126.18	126.21	130.45
L-B-60	Rectangular	2238+91.32	MH-29	MH-32	116.85	116.84	2.00	7.00	5.00	10.62	0.09	435	16.35	6.19	126.21	125.95	130.09
L-A-38	Rectangular	2142+51.63	MH-3	A-13	130.20	130.05	1.00	6.00	3.00	148.36	0.10	101	15.91	5.56	136.28	136.23	137.14
L-A-38	Trapezoidal	2142+51.63	MH-3	A-13	135.36	134.92	1.00	38.00	0.50	148.36	0.30	26	16.85	1.62	136.28	136.23	137.14
L-B-58	Circular	2242+89.73	MH-30	MH-31	118.80	117.88	1.00	0.00	3.50	367.27	0.25	25	16.25	2.60	126.34	126.27	130.85
L-B-59	Circular	2239+20.45	MH-31	B-31	117.88	117.82	1.00	0.00	3.50	64.08	0.09	26	16.23	2.65	126.27	126.23	129.83
E131	**Natural**	**2238+94.89**	**MH-32**	**E131-OUT**	**116.84**	**117.85**	**1.00**	**0.00**	**0.00**	**475.00**	**-0.21**	**422**	**16.48**	**1.37**	**125.95**	**125.86**	**131.92**
L-B-65	Circular	122+51.64	MH-33	B-65	120.62	120.51	1.00	0.00	2.00	162.07	0.07	14	19.56	4.35	128.00	127.46	128.00
L-B-67	Circular	123+98.05	MH-34	B-64	120.34	120.25	1.00	0.00	2.50	91.77	0.10	33	19.50	6.58	127.96	126.97	127.90
L-B-69	Circular	126+07.40	MH-35	B-63	119.58	119.37	1.00	0.00	3.50	212.15	0.10	44	19.51	4.56	127.04	127.10	125.80
L-B-71	Circular	129+15.80	MH-36	B-62	119.28	119.24	1.00	0.00	3.50	44.83	0.09	95	19.52	9.84	127.11	127.12	125.50
L-B-77	Circular	135+26.15	MH-37	MH-38	118.68	118.60	1.00	0.00	4.50	89.68	0.09	124	19.07	7.74	127.65	131.15	127.20
L-B-78	Circular	2253+23.59	MH-38	B-57	118.60	118.55	1.00	0.00	4.50	54.83	0.09	119	19.07	7.46	131.15	127.10	127.00
L-B-80	Circular	2251+42.33	MH-39	MH-40	118.43	118.28	1.00	0.00	4.50	158.15	0.09	179	19.19	11.18	127.85	127.50	127.00
L-A-41	Rectangular	2145+51.15	MH-4	MH-5	129.86	129.47	1.00	6.00	3.00	300.00	0.13	100	15.91	5.54	136.79	136.79	136.79
L-B-82	Circular	2249+83.35	MH-40	B-56	118.28	118.19	1.00	0.00	4.50	95.34	0.09	167	19.04	10.45	127.50	127.67	127.50
L-B-86	Rectangular	2238+89.55	MH-41	B-47	117.21	117.12	1.00	5.00	5.00	89.64	0.10	200	19.29	7.98	127.06	126.83	127.06
L-B-89	Rectangular	2241+11.95	MH-42	MH-41	117.43	117.21	1.00	5.00	5.00	222.23	0.10	201	19.29	8.01	127.75	127.06	127.75
L-D-14	Circular	106+77.66	MH-43	MH-44	111.73	111.73	1.00	0.00	4.50	45.65	0.00	35	16.05	2.21	120.45	120.42	128.63
L-D-15	Circular	106+31.71	MH-44	D-13	114.89	114.83	1.00	0.00	5.50	150.88	0.04	36	16.05	1.51	120.42	120.38	128.54
L-A-44	Rectangular	2148+51.15	MH-5	A-17	129.47	128.67	1.00	6.00	3.00	448.74	0.18	92	15.91	5.94	136.79	135.01	136.79
L-A-53	Circular	2200+59.37	MH-6	A-34	124.56	124.23	1.00	0.00	2.50	259.13	0.13	20	18.09	4.00	131.54	131.32	131.79
L-A-55	Circular	2195+35.93	MH-7	A-31	123.97	123.74	1.00	0.00	3.50	235.72	0.10	31	15.76	3.39	131.15	131.01	131.50
L-A-57	Circular	2189+99.92	MH-8	A-29	123.44	123.14	1.00	0.00	4.00	299.67	0.10	38	15.76	3.42	130.92	130.81	131.99
L-A-68	Circular	2135+40.00	MH-9	A-45	130.79	129.96	1.00	0.00	3.00	559.96	0.15	27	16.21	4.12	138.38	137.63	139.66
Link445	Circular		Node458	MH-33	0.05	0.00	1.00	0.00	0.05	10.00	0.50	4	15.57	8.41	126.64	128.00	128.91

Table 14.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (100-Year) - Outfalls 5-6

Model: US290_Prop_SegD_SysA.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 5																	
L_A-1	Circular	133+98.14	A-1	MH-A1	120.76	120.56	1.00	0.00	2.00	136.03	0.15	30	18.21	9.46	127.19	127.15	126.50
L_A-10	Rectangular	2276+83.33	A-10	A-12	116.30	115.98	1.00	5.00	3.00	216.70	0.15	88	15.79	5.81	125.57	125.48	123.86
L_A-10	Trapezoidal	2276+83.33	A-10	A-12	123.36	122.61	1.00	38.00	0.50	216.70	0.35	30	16.07	1.73	125.57	125.48	123.86
L_A-11	Rectangular	2278+74.79	A-11	A-13	116.44	115.65	1.00	5.00	3.00	524.58	0.15	76	15.85	5.07	124.16	123.92	124.44
L_A-11	Trapezoidal	2278+74.79	A-11	A-13	123.44	123.40	1.00	38.00	0.50	524.58	0.01	25	16.66	1.35	124.16	123.92	124.44
L_A-12	Rectangular	2279+00.00	A-12	MH-A3	115.98	115.50	1.00	5.00	3.00	319.11	0.15	97	17.98	6.96	125.48	125.04	123.11
L_A-13	Rectangular	2284+00.00	A-13	MH-A4	115.65	115.25	1.00	6.00	3.00	266.91	0.15	97	15.85	7.30	123.92	123.69	124.44
L_A-14	Circular	2289+00.00	A-14	MH-A5	116.12	115.55	1.00	0.00	2.50	379.56	0.15	26	18.03	5.36	124.52	124.42	123.68
L_A-15	Rectangular	2288+00.00	A-15	MH-A4	113.76	113.57	1.00	5.00	3.00	128.88	0.15	98	18.24	7.40	123.59	123.69	124.44
L_A-16	Circular	2292+50.00	A-16	A-14	117.14	116.62	1.00	0.00	2.00	349.97	0.15	23	18.41	7.22	124.53	124.52	122.34
L_A-16	Trapezoidal	2292+50.00	A-16	A-14	121.84	123.18	1.00	38.00	0.50	349.97	-0.38	15	17.96	1.12	124.53	124.52	122.34
L_A-17	Rectangular	2292+00.00	A-17	A-15	114.36	113.76	1.00	5.00	3.00	399.59	0.15	98	18.25	6.52	123.67	123.59	123.39
L_A-17	Trapezoidal	2292+00.00	A-17	A-15	122.89	123.94	1.00	38.00	0.50	399.59	-0.26	0	0.00	0.00	123.67	123.59	123.39
L_A-18	Rectangular	2296+49.68	A-18	A-17	115.04	114.36	1.00	4.00	3.00	449.68	0.15	85	18.24	7.07	123.69	123.67	121.81
L_A-18	Trapezoidal	2296+49.68	A-18	A-17	121.31	122.89	1.00	38.00	0.50	449.68	-0.35	14	17.51	0.99	123.69	123.67	121.81
L_A-19	Circular	2298+99.64	A-19	A-18	115.41	115.04	1.00	0.00	3.00	249.96	0.15	64	18.30	8.97	123.69	123.69	120.94
L_A-19	Trapezoidal	2298+99.64	A-19	A-18	120.44	121.31	1.00	38.00	0.50	249.96	-0.35	22	18.22	1.50	123.69	123.69	120.94
L_A-2	Circular	2256+01.79	A-2	A-4	119.43	118.83	1.00	0.00	3.00	403.17	0.15	33	18.21	4.68	127.12	126.87	126.46
L_A-21	Rectangular	131+82.58	A-21	MH-A10	113.33	113.23	1.00	5.00	5.00	100.00	0.10	143	16.25	9.87	124.64	124.54	125.50
L_A-22	Circular	132+80.91	A-22	MH-A10	114.33	114.23	1.00	0.00	4.00	100.00	0.10	55	16.25	4.31	124.60	124.54	125.50
L_A-23	Rectangular	122+26.28	A-23	MH-A7	122.60	122.16	1.00	8.00	4.00	262.00	0.17	35	22.33	1.50	125.85	125.87	129.80
L_A-24	Rectangular	121+93.38	A-24	MH-A8	122.59	122.17	1.00	8.00	4.00	322.00	0.13	34	17.43	1.54	125.41	125.37	128.50
L_A-24A	Trapezoidal	2205+87.24	A-24A	A-24	127.66	122.59	1.00	2.00	4.00	3453.00	0.15	17	17.89	1.29	129.29	125.41	132.00
L_A-24B	Trapezoidal	2156+18.61	A-24B	A-24A	132.98	127.66	1.00	2.00	2.00	5321.09	0.10	8	17.33	0.88	134.23	129.29	137.14
L_A-3	Circular	2260+00.00	A-3	A-5	119.75	119.00	1.00	0.00	2.50	500.14	0.15	20	17.64	4.11	125.23	125.10	125.58
L_A-3	Trapezoidal	2260+00.00	A-3	A-5	125.08	124.59	1.00	38.00	0.50	500.14	0.10	5	16.49	0.55	125.23	125.10	125.58
L_A-4	Rectangular	2260+00.00	A-4	A-6	118.83	118.04	1.00	4.00	3.00	525.73	0.15	53	15.85	4.38	126.87	126.39	125.41
L_A-5	Circular	2265+00.00	A-5	A-7	118.50	117.90	1.00	0.00	3.00	399.69	0.15	30	15.84	6.73	125.10	125.02	125.09
L_A-5	Trapezoidal	2265+00.00	A-5	A-7	124.59	123.99	1.00	38.00	0.50	399.69	0.15	17	16.42	1.02	125.10	125.02	125.09
L_A-6	Rectangular	2265+25.73	A-6	A-8	118.04	117.33	1.00	4.00	3.00	474.27	0.15	69	15.77	6.99	126.39	126.25	126.05
L_A-6	Trapezoidal	2265+25.73	A-6	A-8	125.55	123.66	1.00	38.00	0.50	474.27	0.40	27	16.37	1.63	126.39	126.25	126.05
L_A-7	Rectangular	2268+99.69	A-7	A-9	117.90	117.00	1.00	4.00	3.00	600.31	0.15	49	15.86	4.29	125.02	124.28	124.49
L_A-8	Rectangular	2270+00.00	A-8	A-10	117.33	116.30	1.00	5.00	3.00	683.35	0.15	81	15.79	5.37	126.25	125.57	124.16
L_A-9	Rectangular	2275+00.00	A-9	A-11	117.00	116.44	1.00	5.00	3.00	374.79	0.15	65	15.85	4.28	124.28	124.16	124.50
L_A-9	Trapezoidal	2275+00.00	A-9	A-11	123.50	123.44	1.00	38.00	0.50	374.79	0.02	24	16.37	1.25	124.28	124.16	124.50
L_BF-63	Circular	122+33.90	BF-63	MH-A6	123.30	123.00	3.00	0.00	3.00	90.25	0.33	-39	17.09	1.61	125.95	125.91	129.70
L_E112-OUT	**Trapezoidal**		**E112-00**	**E112-OUT**	**110.46**	**110.28**	**1.00**	**10.00**	**9.00**	**150.00**	**0.12**	**497**	**16.90**	**2.97**	**116.44**	**116.26**	**120.00**
L_E112-01	Rectangular		E112-01	E112-00	112.30	110.46	1.00	10.00	5.00	1536.00	0.12	497	16.90	9.90	123.12	116.44	123.00
L_MH-A1	Circular	135+34.00	MH-A1	A-2	120.56	120.43	1.00	0.00	2.00	82.25	0.15	-36	18.15	9.35	127.15	127.12	126.50
L_MH-A10	Rectangular	132+41.85	MH-A10	MH-A9	113.23	112.95	1.00	9.00	5.00	230.25	0.12	198	16.25	5.29	124.54	124.49	125.50
L_MH-A3	Rectangular	2282+19.11	MH-A3	MH-A5	113.50	113.05	1.00	7.00	5.00	301.78	0.15	301	17.88	8.55	125.04	124.42	124.00
L_MH-A4	Rectangular	2285+97.62	MH-A4	E112-01	112.42	112.30	1.00	9.00	5.00	101.43	0.12	506	17.26	13.40	123.69	123.13	123.94
L_MH-A5	Rectangular	2285+20.66	MH-A5	MH-A4	112.78	112.42	1.00	9.00	5.00	294.40	0.12	403	17.69	8.90	124.42	123.69	125.13
L_MH-A6	Trapezoidal	121+63.75	MH-A6	A-23	123.00	122.60	1.00	2.00	4.00	217.00	0.18	35	22.20	1.92	125.91	125.85	129.31
L_MH-A6A	Trapezoidal	2206+27.66	MH-A6A	MH-A6	128.69	123.00	1.00	2.00	3.00	3195.00	0.18	34	17.67	1.75	130.78	125.91	132.50
L_MH-A6B	Trapezoidal	2156+34.38	MH-A6B	MH-A6A	134.00	128.69	1.00	2.00	2.00	5306.00	0.10	17	17.19	1.20	135.77	130.78	137.00
L_MH-A7	Trapezoidal	123+64.14	MH-A7	MH-A7A	122.16	121.99	1.00	2.00	4.00	173.00	0.10	35	22.44	1.27	125.87	125.85	129.40
L_MH-A7A	Rectangular		MH-A7A	MH-A7B	121.99	121.90	1.00	3.00	2.00	95.00	0.09	35	22.51	5.87	125.85	125.10	128.50
L_MH-A7B	Trapezoidal		MH-A7B	MH-A3	121.90	119.76	1.00	2.00	4.00	2762.85	0.08	41	17.79	1.73	125.10	125.04	128.50
L_MH-A8	Trapezoidal	123+06.59	MH-A8	MH-A9	122.17	121.70	1.00	2.00	4.00	3213.97	0.01	33	17.57	1.33	125.37	124.49	128.50
L_MH-A9	Rectangular	134+52.75	MH-A9	MH-A5	112.95	112.78	1.00	9.00	5.00	146.73	0.12	208	16.33	12.29	124.49	124.42	125.70
L_POND	Rectangular		POND	MH-A10	113.32	113.23	1.00	9.00	5.00	74.21	0.12	-402	16.37	3.60	121.35	121.35	122.00

Table 14.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (100-Year) - Outfalls 5-6

Model: US290_Prop_SegD_SysA.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 6																	
L-A-2A	Trapezoidal		A-1A	A-2A	118.66	118.30	1.00	2.00	3.00	100.00	0.36	3	16.78	1.19	119.49	119.45	125.00
L-A-1A	Trapezoidal		A-1AA	A-1A	119.50	118.66	1.00	2.00	3.00	590.00	0.14	0	0.00	0.00	119.50	119.49	125.00
L-A-5A	Trapezoidal		A-2A	A-5A	118.30	116.90	1.00	2.00	3.00	452.00	0.31	5	16.77	0.88	119.45	119.44	125.00
L-A-8A	Trapezoidal		A-5A	A-8A	116.90	116.70	1.00	2.00	3.00	597.00	0.03	24	16.42	1.23	119.44	119.14	125.00
L-B-10A	Trapezoidal		A-8A	B-10A	116.70	115.70	1.00	2.00	3.00	805.00	0.12	29	16.49	1.05	119.14	118.77	125.00
L_AN-0	Circular	2365+49.72	AN-0	B-31	108.15	107.40	1.00	0.00	3.00	749.82	0.10	20	16.04	2.79	114.99	114.95	114.15
L_AS-0	Circular	2361+45.00	AS-0	B-32	108.45	107.68	1.00	0.00	3.00	515.00	0.15	25	15.86	3.51	115.90	115.32	114.46
L_AS-1	Circular	2366+52.45	AS-1	AS-0	110.21	109.45	1.00	0.00	2.00	505.00	0.15	9	15.92	2.96	116.47	115.90	115.68
L_B-1	Circular		B-1	B-3	110.50	110.08	1.00	0.00	3.00	427.21	0.10	19	15.84	5.84	118.16	117.72	118.15
L_B-10	Rectangular	2315+50.00	B-10	B-12	112.30	111.70	1.00	4.00	3.00	400.18	0.15	50	16.12	4.28	119.15	118.77	119.57
L_B-10-OF	Trapezoidal	2315+50.00	B-10	A-8A	119.07	116.70	1.00	50.00	0.50	15.00	15.80	17	16.12	1.52	119.15	119.14	119.57
L-B-11A	Trapezoidal		B-10A	B-11A	115.70	115.62	1.00	2.00	3.00	698.00	0.01	41	16.56	1.39	118.77	118.19	125.00
L_B-11	Rectangular	2324+00.00	B-11	B-13	107.58	107.38	1.00	5.00	4.00	199.62	0.10	66	15.94	3.75	116.38	116.25	117.00
L_B-11	Trapezoidal	2324+00.00	B-11	B-13	116.50	115.90	1.00	38.00	0.50	199.62	0.30	0	0.00	0.00	116.38	116.25	117.00
L-B-13A	Trapezoidal		B-11A	B-13A	115.62	114.70	1.00	2.00	3.00	301.00	0.31	50	16.57	2.05	118.19	117.83	125.00
L_B-12	Rectangular	2319+50.00	B-12	B-14	111.70	111.18	1.00	4.00	3.00	350.21	0.15	40	15.76	4.12	118.77	118.52	118.87
L_B-12-OF	Trapezoidal	2319+50.00	B-12	B-10A	118.37	115.70	1.00	50.00	0.50	15.00	17.80	37	15.98	3.25	118.77	118.77	118.87
L_B-13	Rectangular	2325+99.62	B-13	B-15	107.38	106.88	1.00	5.00	4.00	500.14	0.10	83	15.97	4.14	116.25	115.75	116.40
L-B-14A	Trapezoidal		B-13A	B-14A	114.70	114.34	1.00	2.00	3.00	301.00	0.12	57	16.60	1.80	117.83	117.47	125.00
L_B-14	Rectangular	2323+00.00	B-14	B-16	111.18	110.58	1.00	4.00	3.00	399.87	0.15	41	15.89	3.74	118.52	118.19	118.08
L-B-16A	Trapezoidal		B-14A	B-16A	114.34	113.93	1.00	2.00	3.00	520.00	0.08	54	16.63	1.78	117.47	116.89	125.00
L_B-15	Rectangular	2330+99.62	B-15	B-17	106.88	106.68	1.00	5.00	4.00	200.00	0.10	95	16.00	8.12	115.75	115.50	115.26
L_B-16	Rectangular	2327+00.00	B-16	B-18	110.58	110.13	1.00	4.00	3.00	300.01	0.15	52	15.90	4.29	118.19	117.83	118.53
L_B-16-OF	Trapezoidal	2327+00.00	B-16	B-11A	118.03	115.62	1.00	50.00	0.50	15.00	16.07	24	16.01	2.08	118.19	118.19	118.53
L-B-18A	Trapezoidal		B-16A	B-18A	113.93	113.12	1.00	2.00	3.00	653.00	0.12	58	16.67	2.34	116.89	115.55	125.00
L_B-17	Rectangular	2332+99.62	B-17	B-19	106.68	106.33	1.00	6.00	4.00	350.58	0.10	99	16.00	4.10	115.50	115.23	115.26
L_B-18	Rectangular	2330+00.00	B-18	B-20	110.13	109.63	1.00	4.00	3.00	330.00	0.15	55	15.92	68.03	117.83	117.46	118.23
L_B-18-OF	Trapezoidal	2330+00.00	B-18	B-13A	117.73	114.70	1.00	50.00	0.50	15.00	20.20	19	16.61	1.61	117.83	117.83	118.23
L-E13504	Trapezoidal		B-18A	E135-04	113.12	108.90	1.00	2.00	3.00	440.00	0.96	59	16.67	2.44	115.55	115.03	125.00
L_B-19	Rectangular	2336+50.00	B-19	B-21	106.33	106.18	1.00	6.00	4.00	149.62	0.10	98	15.82	4.05	115.23	115.17	115.09
L_B-19	Trapezoidal	2336+50.00	B-19	B-21	114.59	113.55	1.00	38.00	0.50	149.62	0.70	26	16.30	1.58	115.23	115.17	115.09
L_B-2-OF	Trapezoidal	2302+00.00	B-2	A-1A	122.17	118.66	1.00	50.00	0.50	15.00	23.40	0	0.00	0.00	120.87	119.49	122.67
L_B-2	Circular	2302+00.00	B-2	B-4	114.83	114.23	1.00	0.00	2.50	400.00	0.15	18	15.84	4.96	120.87	120.31	122.67
L_B-2	Trapezoidal	2302+00.00	B-2	B-4	121.67	120.27	1.00	38.00	0.50	400.00	0.35	0	0.00	0.00	120.87	120.31	122.67
L_B-20	Rectangular	2333+30.00	B-20	B-22	109.63	109.30	1.00	4.00	3.00	220.00	0.15	55	15.94	4.58	117.46	117.13	117.78
L_B-20-OF	Trapezoidal	2333+30.00	B-20	B-14A	117.28	114.34	1.00	50.00	0.50	15.00	19.60	12	16.19	1.04	117.46	117.47	117.78
L_B-21	Rectangular	2337+99.62	B-21	B-23	106.18	105.58	1.00	6.00	4.00	600.12	0.10	120	15.83	8.05	115.17	114.97	114.05
L_B-22	Rectangular	2335+50.00	B-22	B-24	109.30	108.85	1.00	4.00	3.00	300.00	0.15	58	15.94	7.27	117.13	116.63	116.57
L_B-23	Rectangular	2343+99.62	B-23	B-25	105.58	105.28	1.00	7.00	4.00	299.33	0.10	132	15.83	4.82	114.97	114.94	112.90
L_B-24	Rectangular	2338+50.00	B-24	B-26	108.85	108.40	1.00	5.00	3.00	300.00	0.15	72	16.15	4.75	116.63	116.11	116.35
L_B-25	Rectangular	2346+98.97	B-25	MH-B1	105.28	105.00	1.00	7.00	4.00	276.78	0.10	142	15.83	7.79	114.94	114.92	113.27
L_B-26	Rectangular	2341+50.00	B-26	B-27	108.40	107.91	1.00	5.00	3.00	330.00	0.15	81	16.19	5.37	116.11	115.65	116.12
L_B-27	Rectangular	2344+80.00	B-27	B-28	107.91	107.47	1.00	5.00	3.00	290.00	0.15	91	16.21	6.03	115.65	115.26	115.49
L_B-28	Rectangular	2347+70.00	B-28	MH-B2	107.47	107.18	1.00	5.00	3.00	195.94	0.15	102	16.21	7.24	115.26	115.02	114.94
L_B-29	Rectangular	2352+45.87	B-29	MH-B1	105.85	105.58	1.00	4.00	4.00	270.06	0.10	58	16.06	6.46	114.93	114.92	113.43
L_B-3	Circular	2308+99.63	B-3	B-5	109.58	109.28	1.00	0.00	3.50	299.97	0.10	30	0.00	6.49	117.72	117.49	116.99
L_B-30	Circular	2351+56.35	B-30	MH-B2	106.47	106.18	1.00	0.00	3.50	190.41	0.15	50	16.25	5.15	115.05	115.02	114.87
L_B-31	Circular	2357+99.73	B-31	B-29	106.40	105.85	1.00	0.00	4.00	553.81	0.10	36	16.07	2.88	114.95	114.93	113.70
L_B-32	Circular	2356+30.00	B-32	B-30	107.68	106.97	1.00	0.00	3.00	473.65	0.15	32	16.25	4.53	115.32	115.05	116.22
L_B-33	Rectangular	2336+45.36	B-33	MH-B3	108.96	108.65	1.00	5.00	5.00	310.01	0.10	186	17.25	9.98	118.49	117.58	119.00
L_B-34	Rectangular	2341+51.05	B-34	MH-B3	109.60	109.40	1.00	5.00	4.00	197.72	0.10	133	16.50	6.63	117.91	117.58	118.07
L_B-4-OF	Trapezoidal	2306+00.00	B-4	A-5A	121.27	116.90	1.00	50.00	0.50	15.00	29.13	0	0.00	0.00	120.31	119.44	121.77
L_B-4	Circular	2306+00.00	B-4	B-6	113.73	113.35	1.00	0.00	3.00	250.00	0.15	27	16.26	3.82	120.31	119.90	121.77
L_B-4	Trapezoidal	2306+00.00	B-4	B-6	120.27	119.40	1.00	38.00	0.50	250.00	0.35	1	16.25	0.12	120.31	119.90	121.77
L_B-5	Circular	2311+99.62	B-5	B-7	108.78	108.38	1.00	0.00	4.00	400.00	0.10	41	0.00	37.16	117.49	117.20	116.62
L_B-6	Circular	2308+50.00	B-6	B-8	113.35	112.83	1.00	0.00	3.00	349.98	0.15	26	15.79	6.58	119.90	119.56	120.40
L_B-6-OF	Trapezoidal	2308+50.00	B-6	A-5A	119.90	116.90	1.00	50.00	0.50	15.00	20.00	35	16.20	3.05	119.90	119.44	120.40
L_B-7	Rectangular	2315+99.62	B-7	B-9	108.38	108.00	1.00	4.00	4.00	380.00	0.10	60	15.94	3.71	117.20	116.83	116.38
L_B-8	Rectangular	2312+00.00	B-8	B-10	112.83	112.30	1.00	3.00	3.00	349.90	0.15	32	16.26	6.51	119.56	119.15	120.12
L_B-8-OF	Trapezoidal	2312+00.00	B-8	A-8A	119.62	116.70	1.00	50.00	0.50	15.00	19.47	0	0.00	0.00	119.56	119.14	120.12

Table 14.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (100-Year) - Outfalls 5-6

Model: US290_Prop_SegD_SysA.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_B-9	Rectangular	2319+79.62	B-9	B-11	108.00	107.58	1.00	4.00	4.00	420.55	0.10	63	15.94	3.92	116.83	116.38	116.40
L-E13504.1	Trapezoidal		D-2A	E135-04	113.05	108.59	1.00	2.00	3.00	160.00	2.79	-10	21.24	0.74	115.03	115.03	125.00
L-D-2A	Trapezoidal		D-3A	D-2A	113.22	113.05	1.00	2.00	3.00	200.00	0.09	-2	21.29	0.52	115.03	115.03	125.00
L-D-3A	Trapezoidal		D-4A	D-3A	113.70	113.22	1.00	2.00	3.00	145.00	0.33	1	16.04	0.69	115.04	115.03	125.00
E135.2	Natural		E135-03	MH-B1	104.48	104.14	1.00	0.00	0.00	61.00	0.56	1390	17.51	3.79	114.93	114.92	116.70
E135.4A	Natural		E135-04	MH-B2	105.50	105.42	1.00	0.00	0.00	20.00	0.40	1351	17.72	3.76	115.03	115.02	119.00
E135.4	Natural		E135-05	E135-04	105.79	105.50	1.00	0.00	0.00	74.00	0.39	1323	17.74	3.73	115.07	115.03	119.00
E135.6	Natural		E135-06	MH-B3	106.38	106.24	1.00	0.00	0.00	87.00	0.17	1239	21.22	2.70	117.60	117.58	118.00
E135.7	Natural		E135-07	E135-06	106.72	106.38	1.00	0.00	0.00	198.00	0.17	1658	21.22	3.76	117.65	117.60	118.00
E135.8	Natural		E135-08	E135-07	106.80	106.72	1.00	0.00	0.00	50.00	0.17	1062	17.25	2.58	117.66	117.65	118.00
E535.2	Circular		E535-02	E135-07	107.00	106.72	1.00	0.00	2.00	103.00	0.28	-20	15.97	6.02	117.67	117.65	118.00
E535.2	Circular		E535-02	E135-07	0.05	0.00	1.00	0.00	0.05	10.00	0.50	1109	21.21	0.00	##########	##########	118.00
E535.2	Circular		E535-02	E135-07	0.05	0.00	1.00	0.00	0.05	10.00	0.50	1109	21.21	0.00	##########	##########	118.00
E135.1	**Natural**	**2349+75.74**	**MH-B1**	**E135-01**	**104.14**	**103.73**	**1.00**	**0.00**	**0.00**	**87.60**	**0.47**	**1436**	**17.50**	**4.27**	**114.92**	**114.90**	**118.83**
E135.3	Natural	2349+65.94	MH-B2	E135-03	105.42	104.48	1.00	0.00	10.83	235.00	0.40	1390	17.51	3.74	115.02	114.93	117.61
E135.5	Rectangular	2339+52.81	MH-B3	E135-05	106.24	105.79	2.00	8.00	8.00	270.00	0.17	1322	17.74	10.32	117.58	115.07	118.07
L_ML-01	Rectangular	2345+95.21	ML-01	B-34	110.04	109.60	1.00	4.00	4.00	444.22	0.10	110	21.97	6.88	119.08	117.91	117.27

Table 15.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (100-Year) - Outfalls 7-8

Model:E127PROP_100.XP & BW8PROP_100.XP **11/4/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfall 7																	
Link590	**Natural**		**6863.30**	**6325.00**	**98.45**	**97.83**	**1**	**0.00**	**0.00**	**538.30**	**0.12**	**1202.47**	**17.30**	**3.33**	**108.60**	**107.03**	**112.53**
Link588	Natural		7185.00	7185(ml)	98.45	98.45	1	0.00	0.00	70.00	0.00	976.53	17.68	1.91	108.71	108.69	112.53
Link655	Natural		7216.80	7185.00	99.44	98.45	1	0.00	0.00	31.80	3.11	950.18	17.00	5.59	108.74	108.71	112.53
Link587	Natural		7253.30	7216.80	99.47	99.44	1	0.00	0.00	36.50	0.08	950.26	17.00	5.76	108.89	108.74	112.56
Link665	Natural		7185(ml)	6863.30	98.45	98.45	1	0.00	0.00	251.70	0.00	1018.97	17.44	1.97	108.69	108.60	112.53
L_AN4	Circular	2370+99.66	AN-1	AN-2	103.88	103.18	1	0.00	3.50	696.00	0.10	32.68	16.15	3.36	114.42	113.68	113.00
L_AN5	Rectangular	2377+99.72	AN-2	AN-J3	103.18	102.93	1	4.00	4.00	250.28	0.10	66.77	16.60	4.14	113.68	113.35	111.94
L_AN7	Rectangular	2382+99.82	AN-3	AN-J4	102.68	102.38	1	5.00	4.00	300.16	0.10	96.80	16.61	4.80	113.03	112.58	111.64
L_AN9	Rectangular	2388+99.84	AN-4	AN-5	102.08	101.68	1	5.00	4.00	399.57	0.10	120.83	16.56	6.00	112.12	111.19	111.04
L_AN10	Rectangular	2392+99.41	AN-5	AN-J5	101.68	101.43	1	6.00	4.00	250.60	0.10	136.40	16.03	5.65	111.19	110.80	110.36
L_AN12	Rectangular	2398+00.00	AN-6	AN-J6	101.18	100.83	1	6.00	4.00	350.00	0.10	155.51	16.03	6.45	110.41	109.79	109.38
L_AN15	Rectangular	2406+60.52	AN-7	6863.30	100.32	100.00	1	6.00	5.00	318.92	0.10	188.40	16.04	8.12	108.89	108.60	108.55
L_AN6	Rectangular	2380+50.00	AN-J3	AN-3	102.93	102.68	1	4.00	4.00	249.82	0.10	66.73	16.86	4.14	113.35	113.03	112.39
L_AN8	Rectangular	2386+00.00	AN-J4	AN-4	102.38	102.08	1	5.00	4.00	299.84	0.10	96.30	16.78	4.78	112.58	112.12	111.94
L_AN11	Rectangular	2395+62.68	AN-J5	AN-6	101.43	101.18	1	6.00	4.00	251.30	0.10	136.37	16.03	5.65	110.80	110.41	110.36
L_AN13	Rectangular	2401+50.00	AN-J6	AN-J7	100.83	100.55	1	6.00	4.00	274.89	0.10	155.48	16.03	6.45	109.79	109.31	109.96
L_AN14	Rectangular	2404+25.00	AN-J7	AN-7	100.55	100.32	1	6.00	4.00	235.39	0.10	155.48	16.03	6.45	109.31	108.89	109.18
L-RD-1	Trapezoidal		A-R1	RD-2	105.44	104.30	1	2.00	4.00	1144.00	0.10	13.41	17.92	1.14	108.84	108.83	109.50
L_AS5	Circular	2371+00.00	AS-2	AS-J3	103.81	103.41	1	0.00	2.50	400.00	0.10	33.02	0.00	3.10	115.46	114.92	114.63
L_AS7	Circular	2379+00.00	AS-3	AS-J4	103.01	102.66	1	0.00	3.50	350.00	0.10	42.27	0.00	3.56	114.37	114.00	113.53
L_AS9	Circular	2386+00.00	AS-4	AS-J5	102.31	102.01	1	0.00	4.00	305.00	0.10	52.50	15.93	4.14	113.63	113.27	112.73
L_AS11	Circular	2392+10.00	AS-5	AS-J6	101.70	101.48	1	0.00	4.00	220.00	0.10	69.14	15.92	5.45	112.91	112.48	111.97
L_AS13	Circular	2396+50.00	AS-6	AS-J7	101.26	100.94	1	0.00	4.00	325.00	0.10	82.01	15.93	6.47	112.05	111.19	111.65
L_AS15	Circular	2403+00.00	AS-7	AS-8	100.61	100.23	1	0.00	4.00	380.00	0.10	101.35	16.01	8.33	110.33	109.42	110.00
L_AS16	Rectangular	2406+80.00	AS-8	7185(ml)	100.23	100.00	1	4.00	4.00	230.51	0.10	113.88	16.01	7.54	109.43	108.69	110.00
L_AS6	Circular	2375+00.00	AS-J3	AS-3	103.41	103.01	1	0.00	2.50	400.00	0.10	33.02	0.00	3.27	114.92	114.37	115.13
L_AS8	Circular	2382+50.00	AS-J4	AS-4	102.66	102.31	1	0.00	3.50	350.00	0.10	42.27	0.00	3.52	114.00	113.63	113.78
L_AS10	Circular	2389+05.00	AS-J5	AS-5	102.01	101.70	1	0.00	4.00	305.00	0.10	52.48	15.93	4.13	113.27	112.91	113.01
L_AS12	Circular	2394+30.00	AS-J6	AS-6	101.48	101.26	1	0.00	4.00	220.00	0.10	69.11	15.92	5.45	112.48	112.05	112.75
L_AS14	Circular	2399+75.00	AS-J7	AS-7	100.94	100.61	1	0.00	4.00	325.00	0.10	81.97	15.93	6.47	111.19	110.33	111.62
L_BN14	Rectangular	2413+41.07	BN-1	6863.30	99.36	99.00	1	4.00	4.00	361.52	0.10	73.53	16.15	6.81	108.96	108.60	107.82
L_BN2	Circular	2419+50.35	BN-2	BN-J1	99.97	99.64	1	0.00	4.00	335.35	0.10	46.44	16.68	3.66	109.51	109.21	107.52
L_BN4	Circular	2424+00.34	BN-3	BN-J2	100.87	100.20	1	0.00	3.00	225.33	0.30	26.20	16.71	3.89	109.97	109.72	106.17
L_BN1	Circular	2416+15.00	BN-J1	BN-1	99.64	99.36	1	0.00	4.00	273.86	0.10	46.65	17.83	6.24	109.21	108.96	108.52
L_BN3	Circular	2421+75.00	BN-J2	BN-2	100.20	99.97	1	0.00	3.00	224.65	0.10	28.76	18.01	4.02	109.72	109.51	107.51
Link653	Circular		BR-1	RD-9	103.38	102.29	1	0.00	2.00	1087.00	0.10	7.36	16.06	2.31	110.31	109.59	109.50
L_BS11	Circular	2412+00.00	BS-1	7185(ml)	100.29	100.00	1	0.00	3.50	289.49	0.10	46.82	16.01	6.25	108.84	108.69	109.19
L_BS2	Circular	2417+50.00	BS-2	BS-J1	100.84	100.56	1	0.00	3.00	275.00	0.10	30.55	16.01	4.28	109.26	109.04	108.90
L_BS4	Circular	2423+00.00	BS-3	BS-J2	101.39	101.11	1	0.00	2.50	275.00	0.10	15.19	15.89	3.06	109.68	109.47	108.45
L_BS1	Circular	2414+75.00	BS-J1	BS-1	100.56	100.29	1	0.00	3.00	275.00	0.10	30.56	16.01	4.29	109.04	108.84	109.45
L_BS3	Circular	2420+25.00	BS-J2	BS-2	101.11	100.84	1	0.00	2.50	275.00	0.10	15.17	15.89	3.06	109.47	109.26	109.27
L-RD-2	Trapezoidal		RD-2	RD-3	104.30	103.79	1	2.00	4.00	508.00	0.10	19.27	18.09	1.10	108.83	108.82	109.50
L-RD-3	Circular		RD-3	RD-4	103.79	103.73	1	0.00	2.50	60.00	0.10	21.18	18.11	4.29	108.82	108.79	109.50
L-RD-4	Trapezoidal		RD-4	RD-5	103.73	103.12	1	2.00	4.00	613.00	0.10	23.68	18.08	1.11	108.79	108.78	109.50
L-RD-5	Trapezoidal		RD-5	RD-6	103.12	101.89	1	2.00	4.00	1225.00	0.10	-40.52	16.34	0.77	108.78	108.76	109.50
L-RD-6	Trapezoidal		RD-6	RD-7	101.89	100.84	1	2.00	4.00	1054.00	0.10	-69.75	16.25	0.77	108.76	108.72	109.50
L-RD-7	Trapezoidal		RD-7	7185.00	100.84	100.33	1	2.00	4.00	510.00	0.10	-92.60	15.94	0.95	108.72	108.71	109.50
Link649	Circular		RD-8	7185.00	100.94	100.30	1	0.00	4.00	636.00	0.10	7.30	16.07	0.71	108.77	108.71	109.50
Link652	Circular		RD-9	RD-8	102.29	100.94	1	0.00	2.00	1352.00	0.10	7.33	16.06	2.30	109.59	108.77	109.50

Table 15.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (100-Year) - Outfalls 7-8

Model:E127PROP_100.XP & BW8PROP_100.XP **11/4/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfall 8																	
L_BN5	Circular	2428+00.33	BN-4	BN-J3	95.56	95.31	1	0.00	3.00	249.67	0.10	-29.75	16.71	2.56	107.25	107.23	106.17
L_BN7	Circular	2433+00.33	BN-5	BN-J4	95.06	94.66	1	0.00	4.00	399.64	0.10	-59.50	16.48	2.84	107.21	107.18	106.47
L_BN9	Rectangular	2441+00.32	BN-6	BN-J5	94.26	93.96	1	4.00	4.00	299.68	0.10	-84.91	16.38	3.17	107.16	107.12	106.22
L_BN11	Rectangular	2447+00.32	BN-7	BN-J6	93.66	93.26	1	7.00	5.00	399.68	0.10	120.73	17.61	4.27	107.09	106.87	106.22
L_BN13	Rectangular	2455+00.00	BN-8	CN-1	92.86	92.54	1	8.00	5.00	323.44	0.10	131.40	17.47	3.88	106.72	106.60	105.56
L_BN6	Circular	2430+50.00	BN-J3	BN-5	95.31	95.06	1	0.00	3.00	250.33	0.10	-29.79	16.71	2.16	107.23	107.21	106.91
L_BN8	Circular	2437+00.00	BN-J4	BN-6	94.66	94.26	1	0.00	4.00	400.32	0.10	-59.56	16.47	2.72	107.18	107.16	107.61
L_BN10	Rectangular	2444+00.00	BN-J5	BN-7	93.96	93.66	1	4.00	4.00	300.32	0.10	-84.97	16.38	3.10	107.12	107.09	107.41
L_BN12	Rectangular	2451+00.00	BN-J6	BN-8	93.26	92.86	1	8.00	5.00	400.00	0.10	120.73	17.61	3.66	106.87	106.72	107.61
Link615	Rectangular		B-R2	BS-J4	94.25	94.21	1	5.00	5.00	40.30	0.00	150.31	16.50	5.98	107.49	107.28	108.97
L_BS5	Circular	2428+00.00	BS-4	BS-J3	95.73	95.48	1	0.00	2.50	250.00	0.10	21.08	16.25	4.25	107.45	107.41	108.15
L_BS7	Circular	2433+00.00	BS-5	BS-6	95.23	94.83	1	0.00	3.00	400.00	0.10	35.34	16.25	4.97	107.38	107.35	108.45
L_BS8	Circular	2437+00.00	BS-6	BS-7	94.83	94.43	1	0.00	3.50	399.93	0.10	-21.10	16.45	2.24	107.35	107.31	108.45
L_BS9	Circular	2441+00.00	BS-7	BS-J4	94.43	94.21	1	0.00	3.50	224.99	0.10	-74.04	16.36	3.43	107.31	107.28	108.45
L_BS12	Rectangular	2445+50.00	BS-8	BN-7	93.98	93.66	1	6.00	5.00	319.53	0.10	116.26	17.01	4.50	107.20	107.09	108.30
L_BS6	Circular	2430+50.00	BS-J3	BS-5	95.48	95.23	1	0.00	2.50	250.00	0.10	21.03	16.25	4.24	107.41	107.38	108.90
L_BS10	Rectangular	2443+25.00	BS-J4	BS-8	94.21	93.98	1	6.00	5.00	225.00	0.10	114.90	16.93	4.60	107.28	107.20	108.97
Link618	Rectangular	211+57.61	BW8DET	CN-J13	87.75	87.61	1	9.00	6.00	130.00	0.00	278.48	16.25	5.14	102.89	102.89	102.50
L_OS4	Circular	2504+92.58	BW8-SE	CS-8	89.41	89.13	1	0.00	6.00	271.60	0.10	135.19	25.56	4.75	102.89	102.89	102.08
L_OS3	Rectangular	2499+06.76	BW8-SW	POND-6A	91.20	91.00	1	7.00	3.00	125.00	0.10	74.85	16.49	3.51	103.12	103.05	102.66
L_CN1	Rectangular	2458+23.49	CN-1	CN-J1	92.54	92.10	1	8.00	5.00	438.38	0.10	145.04	19.30	3.86	106.60	106.37	103.00
L_CN3	Rectangular	2467+00.30	CN-2	CN-J2	91.66	91.26	1	8.00	5.00	399.70	0.10	190.89	18.71	4.73	106.14	105.91	104.67
L_CN6	Rectangular	2477+80.30	CN-3	CN-4	90.58	90.26	1	10.00	5.00	320.22	0.10	296.56	17.34	5.87	105.50	105.09	101.82
L_CN7	Rectangular	2481+00.00	CN-4	CN-J4	90.26	89.86	1	9.00	6.00	400.00	0.10	306.89	17.23	5.64	105.09	104.68	101.42
L_CN10	Rectangular	2493+00.00	CN-5	CN-J6	89.06	88.71	1	9.00	6.00	349.96	0.10	340.41	17.07	6.26	103.88	103.50	101.47
L_CN12	Rectangular	2499+00.00	CN-6	CN-J7	88.46	88.16	1	9.00	6.00	299.99	0.10	385.85	16.90	7.10	103.23	102.89	101.32
L_CN14	Rectangular	2505+00.00	CN-7	CN-J8	87.86	87.73	2	7.00	6.00	137.61	0.10	636.79	16.35	7.54	102.89	102.89	100.87
L_CN22	Circular	2514+00.00	CN-8	CN-J15	90.00	89.70	1	0.00	4.00	245.69	0.10	-34.37	25.58	2.58	102.89	102.89	100.27
L_CN2	Rectangular	2462+62.00	CN-J1	CN-2	92.10	91.66	1	8.00	5.00	438.18	0.10	158.45	19.29	3.93	106.37	106.14	104.34
L_CN17	Rectangular	2507+95.01	CN-J10	CN-J11	87.43	87.24	2	7.00	6.00	184.54	0.10	636.70	16.35	7.55	102.88	102.88	102.34
L_CN23	**Rectangular**	**2509+23.24**	**CN-J11**	**E135-01**	**87.24**	**87.19**	**2**	**8.00**	**8.00**	**60.06**	**0.10**	**937.11**	**16.30**	**7.31**	**102.88**	**102.88**	**101.94**
L_CN18	Rectangular	2510+49.51	CN-J12	CN-J11	87.41	87.24	1	9.00	6.00	165.16	0.10	310.70	16.25	5.73	102.88	102.88	101.49
L_CN19	Rectangular	2511+02.56	CN-J13	CN-J12	87.61	87.41	1	9.00	6.00	200.04	0.10	310.72	16.25	5.73	102.89	102.88	101.31
Link617	Rectangular	2511+54.31	CN-J15	BW8DET	88.20	88.00	1	6.00	6.00	130.00	0.00	267.18	16.25	7.40	102.89	102.89	101.13
L_CN4	Rectangular	2471+00.00	CN-J2	CN-J3	91.26	90.86	1	8.00	5.00	400.00	0.10	206.38	18.71	5.11	105.91	105.67	105.22
L_CN5	Rectangular	2475+00.00	CN-J3	CN-3	90.86	90.58	1	8.00	5.00	280.29	0.10	187.98	18.31	4.66	105.67	105.50	103.22
L_CN8	Rectangular	2485+00.00	CN-J4	CN-J5	89.86	89.46	1	9.00	6.00	399.93	0.10	304.34	17.31	5.60	104.68	104.28	103.42
L_CN9	Rectangular	2489+00.00	CN-J5	CN-5	89.46	89.06	1	9.00	6.00	400.00	0.10	301.56	17.31	5.54	104.28	103.88	102.87
L_CN11	Rectangular	2496+50.00	CN-J6	CN-6	88.71	88.46	1	9.00	6.00	249.97	0.10	337.75	17.06	6.21	103.50	103.23	102.32
L_CN13	Rectangular	2502+00.00	CN-J7	CN-7	88.16	87.86	2	7.00	6.00	300.00	0.10	607.83	16.33	7.20	102.89	102.89	102.37
L_CN15	Rectangular	2506+02.80	CN-J8	CN-J9	87.73	87.58	2	7.00	6.00	150.00	0.10	636.75	16.34	7.54	102.89	102.88	101.38
L_CN16	Rectangular	2506+95.66	CN-J9	CN-J10	87.58	87.43	2	7.00	6.00	150.00	0.10	636.72	16.35	7.55	102.88	102.88	101.85
L_CS1	Circular	2463+00.00	CS-1	CS-J1	95.44	95.19	1	0.00	3.00	249.96	0.10	30.28	16.20	4.22	106.90	106.85	105.83
L_CS3	Circular	2468+00.00	CS-2	CS-3	93.94	93.64	1	0.00	3.50	299.95	0.10	54.55	16.21	5.60	106.81	106.74	105.56
L_CS4	Circular	2471+00.00	CS-3	CS-J2	93.64	93.29	1	0.00	4.00	349.98	0.10	76.20	16.21	6.01	106.74	106.67	106.61
L_CS6	Rectangular	2478+00.00	CS-4	CN-3	92.94	92.58	1	5.00	4.00	361.73	0.10	150.70	16.84	7.45	106.59	105.50	103.46
L_CS7	Circular	2481+00.00	CS-5	CS-J3	93.85	93.45	1	0.00	3.00	399.99	0.10	24.72	16.06	3.45	104.33	104.10	103.16
L_CS10	Circular	2491+00.00	CS-6	CS-J5	91.85	91.45	1	0.00	4.00	400.00	0.10	74.21	16.05	5.85	103.77	103.39	101.76
L_CS13	Rectangular	2500+00.00	CS-7	CN-J7	90.69	90.16	1	8.00	4.00	524.02	0.10	271.14	16.16	8.42	102.98	102.89	100.71
L_CS14	Circular	2507+00.00	CS-8	CS-J7	89.13	88.73	1	0.00	6.00	399.95	0.10	151.26	16.25	5.32	102.89	102.89	100.81
L_CS15	Circular	2514+00.00	CS-9	CS-J7	91.53	91.23	1	0.00	3.50	299.94	0.10	53.47	16.00	5.53	102.89	102.89	100.46
L_CS2	Circular	2465+50.00	CS-J1	CS-2	94.69	94.44	1	0.00	3.00	250.00	0.10	30.20	16.20	4.21	106.85	106.81	106.81
L_CS5	Circular	2474+50.00	CS-J2	CS-4	93.29	92.94	1	0.00	4.00	349.89	0.10	76.13	16.21	6.01	106.67	106.59	105.03
L_CS8	Circular	2485+00.00	CS-J3	CS-J4	93.45	93.15	1	0.00	3.00	299.92	0.10	24.69	16.06	3.45	104.10	103.93	103.86
L_CS9	Circular	2488+00.00	CS-J4	CS-6	93.15	92.85	1	0.00	3.00	300.00	0.10	24.66	16.06	3.44	103.93	103.77	102.81
L_CS11	Circular	2495+00.00	CS-J5	CS-J6	91.45	91.15	1	0.00	4.00	300.00	0.10	74.16	16.05	5.85	103.39	103.11	102.46
Link616	Circular	2498+00.00	CS-J6	POND-6A	91.15	91.00	1	0.00	4.00	70.00	0.00	74.11	16.05	5.85	103.11	103.05	101.41
L_CS16	Circular	2511+00.00	CS-J7	CN-J15	88.73	88.20	1	0.00	6.00	535.43	0.10	200.37	16.25	7.05	102.89	102.89	101.51

Table 15.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (100-Year) - Outfalls 7-8

Model:E127PROP_100.XP & BW8PROP_100.XP **11/4/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
BS-ML	Circular		ML-03	ML-04	95.21	94.39	1	0.00	5.00	819.64	0.00	76.35	16.50	3.86	107.96	107.58	109.04
L_BS14	Rectangular	2441+61.51	ML-04	B-R2	94.39	94.25	1	5.00	5.00	132.33	0.10	143.97	16.50	5.72	107.58	107.49	108.97
L_OS2	Circular	2478+70.48	ML-05	CS-4	93.45	92.94	1	0.00	3.00	508.23	0.10	40.99	19.11	5.70	107.24	106.59	106.46
L_CS12	Rectangular		POND-6A	CS-7	91.00	90.69	1	8.00	4.00	120.00	0.10	218.11	16.09	6.77	103.05	102.98	102.50
L_OS1	Circular	2480+89.48	SNT01	CS-4	93.24	92.94	1	0.00	4.00	297.79	0.10	111.93	16.65	0.00	##########	##########	104.71
L_OS1	Circular	0+00.00	SNT01	CS-4	93.24	92.94	1	0.00	4.00	297.79	0.10	111.93	16.65	0.00	##########	##########	104.71

Table 15.0-A

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (100-Year) - Outfalls 8A-8B **Model:BW8South_Prop_100.xp** **2/27/2012**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 8A-8B																
L_L-L24	Rectangular	DI-L24	DI-L25	95.24	93.96	1	6.00	4.00	749.30	0.17	201	16.45	8.38	101.12	97.96	103.76
L_L-L24	Trapezoidal	DI-L24	DI-L25	102.21	101.80	1	0.00	0.50	749.30	0.00	0	0.00	0.00	97.96	97.96	103.76
L_L-F2	Circular	CI-F2	DI-L24	97.82	97.73	1	0.00	1.50	46.59	0.19	8	16.00	4.31	101.24	101.12	102.84
L_L-L23	Rectangular	MH-L23	DI-L24	95.77	95.24	1	6.00	4.00	326.54	0.16	191	16.84	7.95	102.33	101.12	104.00
L_L-E5	Circular	CI-E5	MH-L23	98.55	98.28	1	0.00	1.50	93.07	0.29	5	16.00	3.23	102.37	102.33	103.39
L_L-L22	Rectangular	MH-L22	MH-L23	95.92	95.77	1	6.00	4.00	105.86	0.14	190	16.88	7.88	102.72	102.33	104.00
L_L-D9	Circular	CI-D9	MH-L22	97.62	97.40	1	0.00	2.50	93.23	0.24	4	16.00	1.94	102.72	102.72	103.39
L_L-L21	Rectangular	L-21	MH-L22	96.06	95.92	1	6.00	4.00	101.78	0.14	188	16.90	7.82	103.09	102.72	104.00
L_L-D8	Circular	CI-D8	CI-D9	97.71	97.62	1	0.00	2.50	51.33	0.18	-1	15.79	0.36	102.72	102.72	103.24
L-L21	Rectangular	BW-J3	L-21	96.18	96.06	1	6.00	3.00	85.02	0.28	144	17.46	7.99	103.29	103.09	103.18
L_L-C7	Circular	CI-C7	L-21	96.61	96.06	1	6.00	2.00	139.50	0.50	13	16.14	4.10	103.45	103.09	103.00
L_L-SD2	Natural	SD-2	SD-3	99.76	97.65	1	6.00	3.00	204.00	1.00	73	18.62	2.54	105.08	105.02	104.46
L_L-SD1	Natural	SD-1	SD-2	100.42	99.76	1	4.00	0.00	597.00	0.11	69	15.81	2.05	105.09	105.08	105.12
L_L-A12	Rectangular	CI-A12	SD-1	100.53	100.42	1	4.00	2.00	89.19	0.14	28	16.02	3.46	105.11	105.09	105.11
L_L-B12	Rectangular	CI-B12	SD-1	100.51	100.42	1	4.00	2.00	88.58	0.10	56	15.95	7.03	105.46	105.09	104.88
L_L-A10	Rectangular	DI-A10	CI-A12	100.84	100.53	1	4.00	2.00	312.29	0.10	13	16.00	1.64	105.12	105.11	104.00
L_L-OFFB12	Rectangular	OFF-B12	CI-B12	100.53	100.51	1	4.00	2.00	24.70	0.08	57	16.17	7.07	105.56	105.46	104.88
L_L-B10	Rectangular	DI-B10	CI-B12	100.70	100.52	1	4.00	2.00	305.74	0.06	18	18.51	2.20	105.47	105.46	104.00
L_L-R12	Rectangular	DI-R12	DI-R13	97.92	96.87	1	5.00	2.00	707.92	0.15	20	16.25	3.66	99.00	97.94	102.60
L_L-R12	Trapezoidal	DI-R12	DI-R13	102.10	101.13	1	0.00	0.50	707.92	0.00	0	0.00	0.00	97.94	97.94	102.60
L_L-R11	Rectangular	CI-R11	DI-R12	97.99	97.92	1	3.00	2.00	59.15	0.12	6	16.02	2.13	99.03	99.00	102.58
L-C5	Rectangular	BW-C4	BW-C5	97.44	97.34	1	6.00	3.00	98.53	0.00	115	17.86	6.36	104.75	104.52	103.04
L_L-C3	Circular	BW-C3	BW-J2	97.91	97.60	1	3.00	3.00	155.98	0.20	51	15.87	8.31	105.44	104.98	103.83
Link38	Rectangular	BW-C5	BW-C6	97.34	96.82	1	6.00	3.00	344.53	0.11	129	17.88	7.11	104.52	103.72	103.50
L_L-B1	Rectangular	B-1	BW-J2	97.67	97.60	1	3.00	2.00	74.00	0.10	35	18.52	5.75	105.00	104.98	102.40
L_L-C2	Circular	BW-C2	BW-C3	98.83	97.91	1	3.00	3.00	229.11	0.30	43	15.96	6.08	106.14	105.44	105.06
L_L-C1	Circular	BW-C1	BW-C2	100.98	99.33	1	3.00	2.50	413.63	0.40	31	16.25	6.72	108.13	106.14	121.33
L-C6	Circular	A-1	BW-C5	97.45	97.34	1	4.00	2.50	73.37	0.15	-48	15.76	7.97	104.53	104.52	102.41
L_L-D4	Rectangular	BW-D4	BW-D5	96.47	96.28	1	5.00	3.00	197.03	0.00	75	16.46	5.86	103.94	103.56	101.87
L_L-D3	Rectangular	BW-D3	BW-D4	96.72	96.47	1	4.00	3.00	197.03	0.20	56	16.05	4.67	104.30	103.94	102.87
L_L-D2	Circular	BW-D2	BW-D3	98.54	96.72	1	4.00	3.00	453.82	0.20	39	16.02	7.23	105.58	104.30	104.90
L_L-D1	Circular	BW-D1	BW-D2	101.48	99.54	1	4.00	2.00	485.94	0.20	20	16.25	6.54	109.08	105.58	125.20
L_L-A2	Rectangular	A-2	SD-2	99.85	99.76	1	4.00	2.00	64.47	0.50	10	16.00	2.00	105.08	105.08	104.14
L-BWJ1	Rectangular	SD-3	BW-J1	97.65	97.48	2	4.00	2.00	33.75	0.12	86	18.61	5.35	105.02	104.85	103.44
Link35	Rectangular	BW-J1	BW-C4	97.48	97.44	1	6.00	3.00	42.47	0.00	110	17.75	6.05	104.85	104.75	103.38
Link34	Rectangular	BW-J2	BW-J1	97.60	97.48	1	4.00	3.00	126.52	0.00	64	15.81	8.38	104.98	104.85	103.56
Link37	Circular	POND6F	A-1	97.60	97.45	1	4.00	2.50	39.25	0.00	26	18.55	5.35	104.53	104.53	103.18
L-BWJ3	Rectangular	BW-C6	BW-C7	96.82	96.69	1	6.00	3.00	85.83	0.00	129	17.87	7.14	103.72	103.53	103.76
L-D5	Rectangular	BW-D5	L-21	96.28	96.06	1	5.00	3.00	216.57	0.00	77	16.60	5.11	103.56	103.09	102.53
Link51	Circular	BW-D6	BW-D5	97.76	97.28	1	0.00	2.00	484.18	0.10	8	17.43	2.65	103.64	103.56	102.53
DummyLink	Circular	BW-D6	CI-R11	0.05	0.00	1	0.00	0.05	10.00	0.00	0	0.00	0.00	0.00	0.00	102.53
L_L-G3	Circular	CI-G3	DI-L25	96.55	96.46	1	0.00	1.50	46.65	0.19	7	16.00	3.77	98.14	97.96	101.92
L_L-A7	Rectangular	CI-A7	DI-R13	96.96	96.87	1	3.00	2.00	62.78	0.14	6	16.00	2.29	97.97	97.94	101.88
L-C4.5	Rectangular	BW-C7	BW-J3	96.69	96.18	1	6.00	3.00	341.92	0.00	131	18.37	7.24	103.53	103.29	104.12
L-C4.5	Trapezoidal	BW-C7	BW-J3	101.69	101.18	1	10.00	2.00	341.92	0.00	49	17.03	1.86	103.53	103.29	104.12
L_L-B9	Rectangular	CI-B9	A-2	99.88	99.85	1	4.00	2.00	30.84	0.13	7	16.11	0.97	105.08	105.08	104.00
Link48	Rectangular	POND6G	B-1	97.76	97.67	1	3.00	2.00	90.00	0.00	21	18.61	3.43	105.01	105.00	102.90

Table 16.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (100-Year) - Outfalls 9-16

7/12/2011

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 9-10																	
L_L-A-12	Rectangular	2534+93.84	A-12	A-13	88.00	87.59	1.00	6.00	4.00	205.56	0.20	134	17.77	6.07	97.48	97.11	95.64
L_L-A-13	Rectangular	2536+99.39	A-13	A-14	87.59	87.39	1.00	6.00	4.00	100.62	0.20	138	18.01	6.16	97.11	96.91	94.82
L_L-A-14	Rectangular	2538+00.00	A-14	A-15	87.39	87.09	1.00	6.00	4.00	150.06	0.20	139	18.11	6.32	96.91	96.61	94.42
L_L-A-15	Rectangular	2539+50.05	A-15	A-17	87.09	86.44	1.00	6.00	4.00	324.37	0.20	141	18.29	9.10	96.61	95.97	94.94
L_L-A-17	Rectangular	2542+74.44	A-17	A-18	86.44	86.09	1.00	7.00	4.00	176.84	0.20	161	15.77	6.48	95.97	95.67	94.86
Link766	Rectangular	2542+74.44	A-17OFF	A-17	86.47	86.44	1.00	4.00	4.00	15.00	0.20	44	16.19	2.73	95.98	95.97	94.86
L_L-A-18	Rectangular	2544+51.28	A-18	A-19	86.09	85.70	1.00	7.00	4.00	192.55	0.20	166	16.04	6.49	95.67	95.34	94.24
L_L-A-19	Rectangular	2546+43.84	A-19	A-20	85.70	85.44	1.00	7.00	4.00	129.54	0.20	171	15.97	6.52	95.34	95.11	93.56
L_L-A-2	Circular	2520+46.69	A-2	A-3	95.80	95.60	1.00	0.00	2.00	98.60	0.20	12	16.26	5.74	99.32	99.29	101.43
L_L-A-20	Rectangular	2547+73.38	A-20	A-21	85.44	85.20	1.00	7.00	4.00	120.46	0.20	173	15.86	7.01	95.11	94.90	93.16
L_L-A-21	Rectangular	2548+93.84	A-21	A-22	85.20	84.89	1.00	7.00	4.00	156.16	0.20	177	15.87	8.41	94.90	94.63	93.16
L_L-A-22	Rectangular	2550+50.00	A-22	A-23	84.89	84.70	1.00	7.00	4.00	92.91	0.20	192	15.92	9.15	94.63	94.46	93.16
L_L-A-23	Rectangular	2551+42.91	A-23	A-24	83.70	83.48	1.00	7.00	5.00	109.98	0.20	217	0.00	9.93	94.46	94.36	93.16
Link759	Circular		A-23B	A-23	85.75	85.70	1.00	0.00	3.00	15.00	0.31	67	0.00	12.47	94.46	94.46	92.47
Link810	Circular	2551+42.91	A-23OFF	A-23B	89.42	88.94	1.00	0.00	1.50	240.00	0.20	17	25.90	9.65	97.33	94.46	94.00
Link756	Rectangular	2552+52.66	A-24	A-OUT2	83.48	83.30	1.00	7.00	5.00	92.12	0.20	219	0.00	10.15	94.36	94.27	92.85
Link811	Circular		A-24OFF	A-24	90.10	89.54	1.00	0.00	1.50	280.00	0.20	6	15.93	3.23	94.43	94.36	93.50
L_L-A-25	Circular	2520+00.28	A-25	A-26	91.78	91.35	1.00	0.00	3.50	175.50	0.25	61	18.60	6.30	100.14	99.84	99.10
L_L-A-26	Circular	2521+75.78	A-26	A-27	91.35	91.03	1.00	0.00	3.50	124.22	0.25	59	18.70	7.53	99.84	99.60	98.23
L_L-A-27	Circular	2523+00.00	A-27	A-28	90.53	90.28	1.00	0.00	4.00	100.64	0.25	60	0.00	5.93	99.60	99.48	97.61
Link753	Circular	2522+99.46	A-27OFF	A-27	92.57	92.53	1.00	0.00	2.00	15.01	0.25	32	18.68	9.95	99.60	99.60	97.61
L_L-A-28	Circular	2524+00.64	A-28	A-29	90.28	89.91	1.00	0.00	4.00	150.67	0.25	71	18.37	6.99	99.48	99.28	97.96
L_L-A-29	Circular	2525+51.30	A-29	A-30	89.91	89.31	1.00	0.00	4.00	238.42	0.25	73	18.37	9.08	99.28	99.01	98.48
L_L-A-3	Circular	2521+45.30	A-3	A-4	95.10	94.70	1.00	0.00	2.50	199.17	0.20	16	16.25	5.58	99.29	99.26	101.04
L_L-A-30	Rectangular	2527+89.73	A-30	A-31	89.31	88.84	1.00	4.00	4.00	186.43	0.25	115	16.35	9.04	99.01	98.42	98.56
L_L-A-31	Rectangular	2529+76.16	A-31	A-32	88.84	88.54	1.00	5.00	4.00	122.24	0.25	117	16.42	6.35	98.42	98.21	97.62
L_L-A-32	Rectangular	2530+98.40	A-32	A-34	88.54	88.03	1.00	5.00	4.00	201.60	0.25	117	16.41	7.68	98.21	97.85	97.01
L_L-A-34	Rectangular	2533+00.00	A-34	A-35	88.03	87.66	1.00	5.00	4.00	150.28	0.25	122	16.38	8.79	97.85	97.53	96.01
L_L-A-35	Rectangular	2534+50.28	A-35	A-36	86.66	85.91	1.00	5.00	5.00	299.38	0.25	151	16.96	7.02	97.53	96.93	96.53
Link745	Circular	2534+04.35	A-35OFF	A-35	88.78	88.66	1.00	0.00	3.00	48.32	0.25	56	18.93	8.24	97.66	97.53	94.00
L_L-A-36	Rectangular	2537+49.76	A-36	A-37	85.91	85.53	1.00	5.00	5.00	150.75	0.25	161	18.90	6.92	96.93	96.62	96.53
L_L-A-37	Rectangular	2539+00.50	A-37	A-38	85.53	85.16	1.00	5.00	5.00	149.75	0.25	162	19.02	6.91	96.62	96.31	96.00
L_L-A-38	Rectangular	2540+50.25	A-38	A-39	85.16	84.72	1.00	5.00	5.00	174.51	0.25	158	17.04	6.93	96.31	95.93	95.48
L_L-A-39	Rectangular	2542+24.76	A-39	A-40	84.72	84.35	1.00	5.00	5.00	150.01	0.25	164	16.17	6.97	95.93	95.59	94.87
L_L-A-4	Circular	2523+44.57	A-4	A-5	92.92	92.57	1.00	0.00	3.00	174.36	0.20	24	16.25	6.06	99.26	99.24	100.24
L_L-A-40	Rectangular	2543+74.76	A-40	A-41	84.35	83.97	1.00	5.00	5.00	149.99	0.25	168	16.13	7.44	95.59	95.25	94.34
L_L-A-41	Rectangular	2545+24.75	A-41	A-42	83.97	83.66	1.00	5.00	5.00	125.00	0.25	173	16.07	7.93	95.25	94.96	93.82
L_L-A-42	Rectangular	2546+49.76	A-42	A-43	83.66	83.28	1.00	5.00	5.00	152.41	0.25	177	16.01	8.71	94.96	94.60	93.38
L_L-A-43	Rectangular	2548+02.17	A-43	A-OUT1	83.28	83.00	1.00	5.00	5.00	111.15	0.25	188	16.02	10.15	94.60	94.33	93.16
L_L-A-44	Circular	2518+50.11	A-44	A-25	92.66	92.28	1.00	0.00	3.00	150.17	0.25	53	18.60	7.51	100.71	100.14	99.85
L_L-A-5	Rectangular	2525+19.00	A-5	A-6	90.38	90.03	1.00	5.00	4.00	175.02	0.20	137	16.37	6.81	99.24	98.94	99.54
L_L-A-50	Circular	2550+00.00	A-50	A-OUT1	85.11	85.00	1.00	0.00	2.00	36.79	0.30	16	24.50	5.70	94.34	94.33	93.16
L_L-A-51	Circular	2551+34.39	A-51	A-50	87.55	87.15	1.00	0.00	2.00	134.39	0.30	16	24.50	5.65	94.36	94.34	93.13
L_L-A-5OFF	Circular	2525+19.00	A-5OFF	A-5	90.40	90.38	1.00	0.00	2.50	15.00	0.12	113	16.79	22.59	100.26	99.24	97.77
L_L-A-6	Rectangular	2526+94.02	A-6	A-7	90.03	89.68	1.00	5.00	4.00	175.23	0.20	143	16.32	7.13	98.92	98.55	98.84
L_L-A-7	Rectangular	2528+69.23	A-7	A-8	89.68	89.42	1.00	5.00	4.00	132.85	0.20	150	16.29	8.53	98.55	98.31	98.14
L_L-A-8	Rectangular	2530+02.09	A-8	A-9	88.99	88.53	1.00	6.00	4.00	229.25	0.20	128	17.64	6.01	98.31	97.93	97.61
L_L-A-9	Rectangular	2532+31.37	A-9	A-12	88.53	88.00	1.00	6.00	4.00	262.46	0.20	128	17.87	6.09	97.93	97.48	96.69
L_L-AA-1	Circular	2555+43.84	AA-1	AA-2	85.51	85.40	1.00	0.00	2.50	110.43	0.10	20	23.88	3.96	94.22	94.21	93.08
L_L-AA-10	Rectangular	2560+00.00	AA-10	MH-AA1	85.20	85.05	1.00	5.00	3.00	150.84	0.10	40	15.96	6.28	94.24	94.23	92.95
L_L-AA-11	Rectangular	2561+49.76	AA-11	AA-10	85.35	85.20	1.00	4.00	3.00	149.76	0.10	36	15.96	6.81	94.25	94.24	92.93
L_L-AA-12	Rectangular	2562+99.76	AA-12	AA-11	85.50	85.35	1.00	4.00	3.00	150.00	0.10	27	0.00	3.46	94.26	94.25	92.87
L_L-AA-13	Rectangular	2564+49.87	AA-13	AA-12	86.65	86.50	1.00	3.00	3.00	150.12	0.10	24	16.01	6.24	94.27	94.26	93.49
L_L-AA-14	Circular	2566+99.89	AA-14	AA-13	86.90	86.65	1.00	0.00	3.00	250.02	0.10	20	0.00	6.41	94.29	94.27	93.89
L_L-AA-15	Circular	2568+25.32	AA-15	AA-14	87.03	86.90	1.00	0.00	3.00	125.43	0.10	17	0.00	3.28	94.29	94.29	93.45
L_L-AA-16	Circular	2569+00.00	AA-16	AA-15	87.60	87.53	1.00	0.00	2.50	74.68	0.10	14	22.72	5.49	94.30	94.29	93.19
L_L-AA-17	Circular	2569+75.51	AA-17	AA-16	87.68	87.60	1.00	0.00	2.50	75.52	0.10	15	22.54	3.03	94.30	94.30	93.45
L_L-AA-18	Circular	2571+00.61	AA-18	AA-17	88.30	88.18	1.00	0.00	2.00	125.10	0.10	14	22.38	4.26	94.30	94.30	93.89
L_L-AA-2	Circular	2556+54.26	AA-2	MH-AA2	85.40	85.32	1.00	0.00	2.50	78.43	0.10	20	23.85	5.32	94.21	94.20	93.03

Table 16.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (100-Year) - Outfalls 9-16

7/12/2011

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_L-AA-3	Circular	2559+00.00	AA-3	MH-AA2	83.85	83.68	1.00	0.00	4.00	168.40	0.10	37	0.00	6.68	94.21	94.20	92.97
L_L-AA-4	Circular	2559+93.84	AA-4	AA-3	83.94	83.85	1.00	0.00	4.00	93.84	0.10	33	0.00	4.48	94.22	94.21	92.96
L_L-AA-5	Circular	2561+26.92	AA-5	AA-4	84.58	84.44	1.00	0.00	3.50	133.09	0.10	27	0.00	6.29	94.22	94.22	92.93
L_L-AA-54	Circular	2556+01.01	AA-54	AA-55	86.05	85.75	1.00	0.00	2.50	148.99	0.20	11	16.02	2.97	94.25	94.24	93.03
L_L-AA-55	Circular	2557+50.00	AA-55	MH-AA1	85.75	85.55	1.00	0.00	2.50	99.21	0.20	17	0.00	6.01	94.24	94.23	93.00
L_L-AA-6	Circular	2562+50.89	AA-6	AA-5	84.70	84.58	1.00	0.00	3.50	123.97	0.10	24	0.00	3.72	94.23	94.22	92.89
L_L-AA-7	Circular	2565+93.84	AA-7	AA-6	85.54	85.20	1.00	0.00	3.00	342.94	0.10	20	0.00	5.97	94.25	94.23	92.76
L_L-AA-8	Circular	2567+00.00	AA-8	AA-7	85.65	85.54	1.00	0.00	3.00	106.16	0.10	15	23.76	2.33	94.25	94.25	92.74
L_L-AA-9	Circular	2568+43.84	AA-9	AA-8	86.79	86.65	1.00	0.00	2.00	143.84	0.10	13	24.37	4.47	94.26	94.25	92.85
L_AA-OUT1	**Natural**	**2556+73.29**	**AA-OUT1**	**E117-OUT**	**78.62**	**78.50**	**1.00**	**0.00**	**0.00**	**35.00**	**0.34**	**2390**	**17.34**	**10.22**	**94.19**	**94.18**	**114.24**
L_L-A-OUT1	Natural	2549+13.31	A-OUT1	MH-A4	78.69	78.69	1.00	0.00	0.00	70.00	0.00	2169	17.00	6.54	94.33	94.32	114.00
L_L-A-OUT2	Natural	2553+44.69	A-OUT2	AA-OUT1	79.10	78.62	1.00	0.00	0.00	293.00	0.16	2351	17.33	3.75	94.27	94.19	113.93
L_GES-1	Circular		GES-1	GES-2	81.87	81.40	1.00	0.00	4.00	238.00	0.20	102	16.94	7.95	97.49	96.54	93.50
L_GES-2	Circular		GES-2	GES-3	81.40	80.91	1.00	0.00	4.00	240.00	0.20	89	18.28	7.19	96.54	95.66	93.50
L_GES-3	Circular		GES-3	GES-4	80.41	79.47	1.00	0.00	4.50	668.00	0.14	90	19.10	5.56	95.66	94.43	93.00
L_GES-4	Circular		GES-4	A-OUT1	79.47	78.81	1.00	0.00	4.50	22.00	3.00	102	19.39	6.33	94.43	94.33	90.80
L_L-MH-A1	Natural		MH-A1	A-OUT2	79.03	79.10	1.00	0.00	0.00	70.00	-0.10	2158	17.32	1.68	94.29	94.27	114.08
L_L-MH-A2	Natural		MH-A2	MH-A1	78.78	79.03	1.00	0.00	0.00	10.00	-2.50	2157	17.32	1.29	94.29	94.29	113.93
L_L-MH-A3	Natural		MH-A3	MH-A2	78.69	78.78	1.00	0.00	0.00	424.00	-0.02	2160	17.07	2.07	94.32	94.29	114.00
L_L-MH-A4	Natural		MH-A4	MH-A3	78.69	78.69	1.00	0.00	0.00	25.00	0.00	2166	17.07	14.61	94.32	94.32	114.00
L_L-MH-AA1	Circular	2558+49.18	MH-AA1	MH-AA2	81.63	81.29	1.00	6.00	4.50	342.10	0.10	134	0.00	10.37	94.23	94.20	92.98
L_L-MH-AA2	Circular	2557+31.95	MH-AA2	AA-OUT1	80.29	80.00	1.00	6.00	5.50	164.00	0.18	165	0.00	9.96	94.20	94.19	93.01
L-POND5C	Circular		POND5C	A-22	84.96	84.89	1.00	0.00	3.00	74.00	0.10	-24	0.00	3.95	94.63	94.63	94.80
L-POND6C	Circular		POND6C	A-12	88.10	88.00	1.00	0.00	3.00	45.00	0.22	81	20.20	11.37	97.49	97.48	96.50
L-POND6D	Circular		POND6D	A-34	88.23	88.03	1.00	0.00	3.00	100.00	0.20	62	19.23	8.75	97.87	97.85	96.50
L-POND6E	Rectangular		POND6E	A-30	89.42	89.31	1.00	5.00	4.00	113.50	0.10	250	19.13	14.91	99.05	99.01	98.00
Outfalls 11																	
L_L-B-10	Rectangular	2581+43.61	B-10	B-12	83.21	82.84	1.00	4.00	3.00	366.26	0.10	47	16.25	6.93	91.66	91.66	90.66
L_L-B-12	Rectangular	2585+09.85	B-12	B-12A	82.84	82.67	1.00	5.00	3.00	167.98	0.10	54	16.25	4.45	91.66	91.66	90.35
L_L-B-12A	Rectangular	2586+77.83	B-12A	B-OUT1	82.67	82.66	1.00	5.00	3.00	10.07	0.12	60	16.25	6.72	91.66	91.66	90.29
L_L-B-13	Circular	2572+99.86	B-13	B-14	87.15	87.00	1.00	0.00	2.00	150.25	0.10	4	16.25	3.94	91.69	91.69	93.59
L_L-B-14	Circular	2574+50.10	B-14	B-15	86.50	86.45	1.00	0.00	2.50	49.91	0.10	9	16.26	4.90	91.69	91.69	92.61
L_L-B-15	Circular	2575+00.00	B-15	B-16	85.95	85.88	1.00	0.00	3.00	75.20	0.10	14	16.26	5.79	91.69	91.69	92.29
L_L-B-16	Rectangular	2575+75.19	B-16	B-17	85.88	85.78	1.00	3.00	3.00	100.00	0.10	17	16.26	2.36	91.69	91.69	92.55
L_L-B-17	Rectangular	2576+75.19	B-17	B-18	85.78	85.48	1.00	3.00	3.00	299.81	0.10	22	16.25	2.53	91.69	91.69	92.90
L_L-B-18	Rectangular	2579+75.01	B-18	B-19	85.48	85.35	1.00	3.00	3.00	124.99	0.10	28	16.25	6.36	91.69	91.69	92.20
L_L-B-19	Rectangular	2581+00.00	B-19	B-20	85.35	85.25	1.00	4.00	3.00	101.87	0.10	36	16.25	3.70	91.69	91.69	91.39
L_L-B-20	Rectangular	2582+01.88	B-20	B-OUT3	85.26	85.12	1.00	4.00	3.00	133.92	0.10	43	16.25	6.53	91.69	91.69	91.75
L_L-B-22	Circular	2588+00.00	B-22	B-OUT1	82.87	82.66	1.00	0.00	2.50	105.78	0.20	15	31.24	5.43	91.66	91.66	90.24
L_L-B-24	Circular	2589+33.43	B-24	B-22	83.64	83.37	1.00	0.00	2.00	133.43	0.20	15	31.24	4.79	91.66	91.66	90.18
L_L-B-25	Rectangular	2585+99.85	B-25	B-OUT3	80.36	80.11	1.00	5.00	3.00	259.23	0.10	80	16.22	5.26	91.69	91.69	91.14
L_L-B-26	Rectangular	2587+00.00	B-26	B-25	80.46	80.36	1.00	5.00	3.00	100.15	0.10	73	16.22	4.81	91.69	91.69	90.49
L_L-B-27	Rectangular	2587+49.85	B-27	B-26	80.51	80.46	1.00	5.00	3.00	49.85	0.10	68	16.23	4.48	91.69	91.69	90.66
L_L-B-28	Rectangular	2588+74.85	B-28	B-27	80.64	80.51	1.00	4.00	3.00	125.00	0.10	64	16.25	6.82	91.79	91.69	91.10
L_L-B-3	Circular	2571+68.84	B-3	B-4	85.18	85.01	1.00	0.00	2.00	174.85	0.10	6	0.00	4.57	91.67	91.67	92.72
L_L-B-4	Circular	2573+43.70	B-4	B-5	84.51	84.31	1.00	0.00	2.50	199.78	0.10	12	16.26	5.29	91.67	91.67	92.02
L_L-B-5	Circular	2575+43.50	B-5	B-6	83.81	83.66	1.00	0.00	3.00	149.89	0.10	19	16.26	6.24	91.67	91.67	91.22
L_L-B-6	Rectangular	2576+93.40	B-6	B-7	83.66	83.51	1.00	3.00	3.00	150.00	0.10	25	16.26	6.27	91.67	91.67	91.03
L_L-B-7	Rectangular	2578+43.40	B-7	B-9	83.51	83.35	1.00	4.00	3.00	156.60	0.10	30	16.26	2.63	91.67	91.67	90.90
L_L-B-9	Rectangular	2580+00.00	B-9	B-10	83.35	83.21	1.00	4.00	3.00	143.61	0.10	41	16.25	3.40	91.67	91.66	90.78
L_L-B-OUT1	Trapezoidal	2586+87.89	B-OUT1	MH-B4	79.59	79.48	1.00	10.00	11.00	109.00	0.10	705	16.54	3.06	91.66	91.66	90.65
L_L-B-OUT3	Trapezoidal	2583+35.81	B-OUT3	MH-B6	80.09	80.01	1.00	10.00	11.00	80.00	0.10	704	15.82	3.81	91.69	91.68	92.21
L_L-MH-B1	Circular	2589+53.69	MH-B1	MH-B2	80.92	80.76	1.00	0.00	3.00	115.47	0.14	56	16.42	8.95	92.61	91.94	92.29
L_L-MH-B2	Rectangular	2589+54.24	MH-B2	MH-B3	80.76	80.72	1.00	4.00	3.00	41.54	0.10	56	16.32	4.60	91.94	91.88	91.38
L_L-MH-B3	Rectangular	2589+54.24	MH-B3	B-28	80.72	80.64	1.00	4.00	3.00	79.39	0.10	56	16.32	4.60	91.88	91.79	91.38
L_L-MH-B4	**Trapezoidal**		**MH-B4**	**SYS-B-OUT**	**79.48**	**79.16**	**1.00**	**10.00**	**11.00**	**330.00**	**0.10**	**702**	**16.55**	**2.63**	**91.66**	**91.64**	**91.00**
L_L-MH-B5	Trapezoidal		MH-B5	B-OUT1	79.67	79.59	1.00	10.00	11.00	86.00	0.09	674	16.54	1.95	91.67	91.66	91.00
L_L-MH-B6	Trapezoidal		MH-B6	MH-B5	80.01	79.67	1.00	10.00	11.00	337.00	0.10	676	16.54	1.90	91.68	91.67	91.50
L_L-MH-B7	Trapezoidal		MH-B7	B-OUT3	83.18	80.09	1.00	10.00	11.00	36.00	8.58	985	15.74	6.22	91.67	91.69	94.80
L_L-MH-B8	Natural		MH-B8	MH-B7	83.86	83.18	1.00	0.00	0.00	206.00	0.33	601	17.05	6.84	92.08	91.67	93.73

Table 16.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (100-Year) - Outfalls 9-16

7/12/2011

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 12																	
L_L-C-1	Circular	2597+00.00	C-1	MH-C1	82.00	81.93	1.00	0.00	3.00	34.91	0.20	28	29.80	5.38	91.36	91.35	89.81
L_L-C-12	Rectangular	2603+49.85	C-12	C-6	81.15	81.05	1.00	4.00	3.00	100.09	0.10	28	0.00	2.85	91.43	91.42	89.32
L_L-C-13	Rectangular	2604+69.85	C-13	C-12	81.27	81.15	1.00	3.00	3.00	120.00	0.10	25	0.00	6.86	91.47	91.43	89.23
L_L-C-14	Rectangular	2605+00.00	C-14	C-13	81.30	81.27	1.00	3.00	3.00	30.15	0.10	22	0.00	2.76	91.48	91.47	89.21
L_L-C-15	Circular	2605+69.85	C-15	C-14	81.37	81.30	1.00	0.00	3.00	69.85	0.10	20	0.00	6.72	91.51	91.48	89.08
L_L-C-2	Rectangular	2598+24.99	C-2	MH-C1	80.63	80.54	1.00	4.00	3.00	90.09	0.10	38	15.84	6.02	91.36	91.35	89.72
L_L-C-21	Circular	2598+46.95	C-21	MH-C2	82.35	82.09	1.00	0.00	3.00	256.54	0.10	22	16.21	5.98	91.20	91.20	89.70
L_L-C-22	Circular	2600+00.00	C-22	C-21	82.50	82.35	1.00	0.00	3.00	153.05	0.10	17	16.20	2.54	91.20	91.20	89.59
L_L-C-23	Circular	2601+55.69	C-23	C-22	83.66	83.50	1.00	0.00	2.00	155.69	0.10	8	30.91	4.37	91.21	91.20	89.47
L_L-C-30	Circular	2592+36.88	C-30	C-31	83.93	83.70	1.00	0.00	2.00	112.98	0.20	19	30.14	6.11	91.38	91.38	91.10
L_L-C-31	Circular	2593+49.85	C-31	C-32	83.70	83.30	1.00	0.00	2.00	200.00	0.20	15	30.24	5.10	91.38	91.37	90.36
L_L-C-32	Circular	2595+49.85	C-32	C-1	82.80	82.50	1.00	0.00	2.50	150.15	0.20	20	30.34	5.75	91.37	91.36	89.92
L_L-C-5	Rectangular	2601+49.85	C-5	C-2	80.95	80.63	1.00	4.00	3.00	324.86	0.10	34	0.00	3.00	91.40	91.36	89.47
L_L-C-6	Rectangular	2602+49.77	C-6	C-5	81.05	80.95	1.00	4.00	3.00	99.91	0.10	30	0.00	2.88	91.42	91.40	89.39
L_L-C-7	Circular	2592+53.58	C-7	C-8	83.79	83.50	1.00	0.00	2.00	146.42	0.20	14	30.67	4.48	91.21	91.20	90.06
L_L-C-8	Circular	2594+00.00	C-8	C-9	83.00	82.73	1.00	0.00	2.50	136.58	0.20	16	16.25	5.76	91.20	91.20	90.00
L_L-C-9	Circular	2595+36.58	C-9	MH-C2	82.23	82.12	1.00	0.00	3.00	53.83	0.20	22	16.25	5.97	91.20	91.20	89.94
L_L-C-OUT	Natural	2595+83.66	C-OUT	MH-C4	79.64	79.39	1.00	0.00	8.50	250.00	0.10	236	16.00	4.58	91.20	91.20	90.32
L_L-MH-C1	Rectangular	2597+34.91	MH-C1	MH-C2	80.54	79.68	2.00	5.00	3.00	340.25	0.25	290	0.00	6.64	91.35	91.20	89.78
L_L-MH-C2	Rectangular	2595+90.41	MH-C2	C-OUT	79.68	79.64	2.00	5.00	3.00	15.54	0.25	338	0.00	10.91	91.20	91.20	89.89
L_L-MH-C3	Circular	2597+59.87	MH-C3	MH-C1	80.65	80.54	1.00	0.00	4.50	48.14	0.23	176	16.54	11.00	91.58	91.35	90.39
L-MH-C4	**Natural**		**MH-C4**	**SYS-C-OUT**	**79.39**	**79.34**	**1.00**	**0.00**	**8.50**	**50.00**	**0.10**	**228**	**15.99**	**4.67**	**91.20**	**91.20**	**89.00**
Outfalls 13																	
L_L-D-1	Circular	2611+00.00	D-1	D-2	80.90	80.50	1.00	0.00	3.00	142.00	0.28	34	15.97	4.83	90.19	90.08	88.14
L_L-D-10	Circular	2624+00.00	D-10	D-9	80.90	80.50	1.00	0.00	2.50	143.88	0.28	15	0.00	4.03	89.24	89.24	87.16
L_L-D-11	Circular	2625+50.51	D-11	D-10	81.82	81.40	1.00	0.00	2.00	150.51	0.28	8	32.16	4.41	89.25	89.24	86.97
L_L-D-14	Circular	2620+48.98	D-14	D-20	77.88	77.60	1.00	0.00	3.50	98.98	0.28	37	0.00	6.02	89.65	89.68	87.56
L_L-D-15	Circular	2621+98.98	D-15	D-14	78.80	78.38	1.00	0.00	3.00	150.00	0.28	28	0.00	6.74	89.55	89.65	87.45
L_L-D-16	Circular	2624+29.57	D-16	D-15	79.44	78.80	1.00	0.00	3.00	230.59	0.28	26	0.00	5.05	89.48	89.55	87.18
L_L-D-17	Circular	2625+53.98	D-17	D-16	79.79	79.44	1.00	0.00	3.00	124.41	0.28	22	0.00	4.76	89.48	89.48	86.94
L_L-D-18	Circular	2627+00.00	D-18	D-17	80.70	80.29	1.00	0.00	2.50	146.02	0.28	18	0.00	6.22	89.46	89.48	86.74
L_L-D-19	Circular	2628+48.98	D-19	D-18	81.62	81.20	1.00	0.00	2.00	148.98	0.28	14	32.40	5.27	89.45	89.46	86.75
L_L-D-2	Circular	2612+42.02	D-2	D-4	80.50	79.75	1.00	0.00	3.00	267.92	0.28	38	15.86	6.95	90.08	89.86	88.15
L_L-D-20	Circular	2619+50.00	D-20	D-OUT2	77.60	77.41	1.00	0.00	3.50	66.33	0.28	41	0.00	7.24	89.68	89.70	87.64
L_L-D-21	Circular	2617+44.52	D-21	D-OUT1	78.56	78.49	1.00	0.00	3.00	27.69	0.28	34	0.00	7.24	89.24	89.24	87.72
L_L-D-29	Circular	2604+78.44	D-29	D-30	83.09	82.58	1.00	0.00	2.00	256.26	0.20	11	30.78	4.64	89.43	89.37	89.22
L_L-D-3	Circular	2609+49.96	D-3	D-1	82.32	81.90	1.00	0.00	2.00	150.03	0.28	7	31.11	4.46	90.20	90.19	88.40
L_L-D-30	Circular	2607+34.69	D-30	D-31	82.08	81.85	1.00	0.00	2.50	115.32	0.20	15	30.54	5.72	89.37	89.35	88.79
L_L-D-31	Circular	2608+50.00	D-31	D-32	81.35	81.13	1.00	0.00	3.00	110.09	0.20	22	0.00	3.90	89.35	89.33	88.58
L_L-D-32	Circular	2609+60.08	D-32	D-34	81.13	80.34	1.00	0.00	3.00	395.97	0.20	27	0.00	6.61	89.33	89.27	88.38
L_L-D-34	Circular	2613+56.03	D-34	D-35	79.84	79.55	1.00	0.00	3.50	143.98	0.20	37	16.12	4.92	89.27	89.26	88.15
L_L-D-35	Circular	2615+00.00	D-35	D-OUT1	79.55	79.12	1.00	0.00	3.50	217.32	0.20	41	16.12	7.17	89.26	89.24	88.15
L_L-D-4	Circular	2615+10.01	D-4	D-5	79.25	78.86	1.00	0.00	3.50	139.63	0.28	41	15.88	5.59	89.86	89.80	88.15
L_L-D-5	Circular	2616+49.66	D-5	D-6	78.86	78.64	1.00	0.00	3.50	80.34	0.28	42	15.88	6.05	89.80	89.77	88.09
L_L-D-6	Circular	2617+30.00	D-6	D-OUT2	78.64	78.21	1.00	0.00	3.50	153.67	0.28	44	15.88	7.31	89.77	89.70	88.00
L_L-D-7	Circular	2618+00.00	D-7	D-21	78.72	78.56	1.00	0.00	3.00	55.50	0.28	31	0.00	6.26	89.24	89.24	87.66
L_L-D-8	Circular	2619+75.98	D-8	D-7	79.21	78.72	1.00	0.00	3.00	175.98	0.28	26	0.00	4.97	89.24	89.24	87.36
L_L-D-9	Circular	2622+56.12	D-9	D-8	80.50	79.71	1.00	0.00	2.50	280.37	0.28	20	0.00	6.36	89.24	89.24	87.36
L_L-D-OUT1	Rectangular	2617+16.86	D-OUT1	MH-D1	71.77	71.66	1.00	8.00	12.00	100.00	0.11	769	17.06	7.99	89.24	89.14	88.01
Link837	Rectangular	2618+83.67	D-OUT2	D-OUT1	72.11	71.77	1.00	8.00	12.00	345.00	0.10	762	17.04	7.92	89.70	89.24	87.71
L_L-MH-D1	**Rectangular**		**MH-D1**	**SYS-D-OUT**	**71.66**	**70.96**	**1.00**	**8.00**	**12.00**	**160.00**	**0.44**	**767**	**17.06**	**7.97**	**89.14**	**89.14**	**88.00**
L_L-MH-D2	Rectangular		MH-D2	D-OUT2	72.26	72.11	1.00	8.00	12.00	150.00	0.10	778	16.85	8.09	89.91	89.70	88.04
Outfalls 14																	
L_L-E-1	Circular	2631+00.00	E-1	E-2	80.10	80.01	1.00	0.00	3.00	95.10	0.10	17	16.26	5.88	86.74	86.73	86.12
L_L-E-10	Rectangular	2642+20.00	E-10	MH-E1	78.98	78.90	1.00	5.00	3.00	82.68	0.10	51	16.26	3.60	86.72	86.72	86.40
L_L-E-11	Rectangular	2643+45.40	E-11	MH-E1	78.90	78.85	1.00	4.00	3.00	42.71	0.10	43	16.25	3.60	86.72	86.72	85.96

Table 16.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (100-Year) - Outfalls 9-16

7/12/2011

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_L-E-12	Rectangular	2644+95.43	E-12	E-18	79.05	78.95	1.00	4.00	3.00	95.44	0.10	34	16.25	2.83	86.73	86.72	86.10
L_L-E-13	Rectangular	2646+45.31	E-13	E-12	79.20	79.05	1.00	4.00	3.00	149.88	0.10	29	16.25	2.74	86.73	86.73	86.63
L_L-E-14	Rectangular	2649+20.31	E-14	E-13	79.47	79.20	1.00	3.00	3.00	275.00	0.10	24	16.26	6.30	86.73	86.73	86.75
L_L-E-15	Circular	2650+70.31	E-15	E-14	79.62	79.47	1.00	0.00	3.00	150.00	0.10	20	16.26	6.43	86.73	86.73	86.22
L_L-E-16	Circular	2652+00.00	E-16	E-15	79.75	79.62	1.00	0.00	3.00	129.69	0.10	16	29.68	2.46	86.73	86.73	85.77
L_L-E-17	Circular	2653+17.02	E-17	E-16	80.87	80.75	1.00	0.00	2.00	117.02	0.10	17	29.68	5.26	86.73	86.73	86.18
L_L-E-18	Rectangular	2644+00.00	E-18	E-11	78.95	78.90	1.00	4.00	3.00	54.60	0.10	39	16.25	3.25	86.72	86.72	85.77
L_L-E-2	Rectangular	2631+95.10	E-2	E-6	80.01	79.58	1.00	3.00	3.00	421.71	0.10	24	16.26	6.33	86.73	86.73	86.45
L_L-E-20	Circular	2632+48.98	E-20	E-21	81.48	81.33	1.00	0.00	2.00	150.00	0.10	6	16.24	4.36	86.72	86.72	87.11
L_L-E-21	Rectangular	2633+98.98	E-21	E-22	80.33	80.23	1.00	3.00	3.00	101.02	0.10	41	16.26	6.02	86.72	86.72	86.58
Link840	Circular	2633+98.98	E-21OFF	E-21	80.85	80.83	1.00	0.00	2.50	14.00	0.10	30	16.38	6.48	86.72	86.72	86.93
L_L-E-22	Rectangular	2635+00.00	E-22	E-23	80.23	80.10	1.00	4.00	3.00	132.79	0.10	49	16.26	4.07	86.72	86.72	86.23
L_L-E-23	Rectangular	2636+32.79	E-23	E-25	80.10	79.78	1.00	4.00	3.00	319.48	0.10	54	16.26	4.52	86.72	86.72	86.70
L_L-E-25	Rectangular	2639+52.28	E-25	E-26	79.78	79.62	1.00	4.00	3.00	155.07	0.10	59	16.25	6.67	86.72	86.72	86.75
L_L-E-26	Rectangular	2641+07.35	E-26	E-27	79.62	79.53	1.00	5.00	3.00	92.65	0.10	65	16.24	4.31	86.72	86.72	86.21
L_L-E-27	Rectangular	2642+00.00	E-27	E-28	79.53	79.40	1.00	5.00	3.00	135.41	0.10	73	16.24	6.54	86.72	86.72	85.88
L_L-E-28	Rectangular	2643+35.41	E-28	MH-E1	78.39	78.10	2.00	6.00	3.00	291.35	0.10	189	16.26	5.23	86.72	86.72	86.36
L_L-E-30	Rectangular	2646+29.25	E-30	E-28	78.69	78.39	1.00	5.00	3.00	293.84	0.10	99	16.16	6.58	86.72	86.72	86.48
Link820	Rectangular	2646+29.65	E-30OFF	E-30	80.55	80.52	1.00	5.00	3.00	14.01	0.20	32	20.18	6.22	86.72	86.72	86.40
L_L-E-31	Rectangular	2647+73.98	E-31	E-30	78.83	78.69	1.00	5.00	3.00	144.74	0.10	74	16.08	4.92	86.72	86.72	85.97
L_L-E-32	Rectangular	2649+01.50	E-32	E-31	78.96	78.83	1.00	4.00	3.00	127.51	0.10	69	16.08	6.75	86.73	86.72	85.53
L_L-E-33	Rectangular	2650+00.00	E-33	E-32	79.06	78.96	1.00	4.00	3.00	98.50	0.10	64	16.09	5.34	86.78	86.73	85.18
L_L-E-34	Rectangular	2651+35.68	E-34	E-33	79.20	79.06	1.00	4.00	3.00	135.68	0.10	58	16.09	4.78	86.91	86.78	85.66
Link836	Rectangular	2651+88.37	E-34OFF	E-34	79.25	79.20	1.00	4.00	3.00	52.69	0.10	53	16.09	4.38	86.97	86.91	85.25
L_L-E-4	Circular	2628+45.31	E-4	E-5	81.35	81.23	1.00	0.00	2.00	123.29	0.10	15	28.31	4.65	87.15	86.76	87.01
L_L-E-5	Circular	2629+68.59	E-5	E-1	80.73	80.60	1.00	0.00	2.50	131.41	0.10	17	28.18	4.85	86.78	86.74	86.58
L_L-E-6	Rectangular	2636+16.81	E-6	E-7	79.58	79.40	1.00	4.00	3.00	183.19	0.10	31	16.25	2.65	86.73	86.73	86.41
L_L-E-7	Rectangular	2638+00.00	E-7	E-8	79.40	79.26	1.00	4.00	3.00	137.86	0.10	42	16.25	6.60	86.73	86.72	85.77
L_L-E-8	Rectangular	2639+37.86	E-8	E-10	79.26	78.98	1.00	5.00	3.00	282.14	0.10	47	16.25	3.13	86.72	86.72	86.25
L_L-E-OUT	Trapezoidal	2642+93.77	E-OUT	MH-E2	78.09	77.78	1.00	8.00	8.00	310.00	0.10	273	16.26	3.38	86.72	86.72	86.14
L_L-MH-E1	Rectangular	2643+02.69	MH-E1	E-OUT	78.10	78.09	2.00	6.00	3.00	16.60	0.10	283	16.26	7.84	86.72	86.72	86.11
L_L-MH-E2	**Trapezoidal**		**MH-E2**	**SYS-E-OUT**	**77.78**	**77.73**	**1.00**	**8.00**	**8.00**	**50.00**	**0.10**	**263**	**16.22**	**3.78**	**86.72**	**86.72**	**86.00**
Outfalls 15																	
L_L-F-1	Circular	2656+34.02	F-1	F-2	81.03	80.49	1.00	0.00	2.00	191.26	0.28	5	0.00	2.43	85.45	85.44	86.35
L_L-F-10	Circular	2671+45.31	F-10	F-9	76.05	75.85	1.00	0.00	3.50	200.00	0.10	30	0.00	6.47	85.42	85.42	83.92
L_L-F-11	Circular	2673+00.00	F-11	F-10	76.20	76.05	1.00	0.00	3.50	154.69	0.10	27	0.00	3.16	85.42	85.42	83.22
L_L-F-12	Circular	2675+50.00	F-12	F-11	76.45	76.20	1.00	0.00	3.50	250.00	0.10	22	16.26	2.85	85.42	85.42	82.97
L_L-F-13	Circular	2676+37.22	F-13	F-12	77.04	76.95	1.00	0.00	3.00	87.22	0.10	18	16.26	5.77	85.42	85.42	83.27
L_L-F-14	Circular	2677+74.19	F-14	F-13	77.17	77.04	1.00	0.00	3.00	136.97	0.10	25	30.67	3.57	85.42	85.42	83.75
L_L-F-15	Circular	2655+98.98	F-15	F-16	80.01	79.69	1.00	0.00	2.00	114.01	0.28	14	29.39	5.45	85.89	85.88	85.18
L_L-F-15A	Circular	2654+48.98	F-15A	F-15	80.43	80.01	1.00	0.00	2.00	150.00	0.28	14	29.17	4.27	85.89	85.89	85.71
L_L-F-16	Circular	2657+12.99	F-16	F-17	79.19	78.95	1.00	0.00	2.50	87.01	0.28	21	29.41	4.16	85.88	85.88	84.79
L_L-F-17	Circular	2658+00.00	F-17	F-18	78.95	78.59	1.00	0.00	2.50	127.69	0.28	21	16.14	6.49	85.88	85.88	84.48
L_L-F-18	Circular	2659+27.69	F-18	F-20	78.09	77.15	1.00	0.00	3.00	335.94	0.28	46	16.14	6.54	85.88	85.82	84.93
L_L-F-2	Circular	2658+25.28	F-2	F-4	80.49	80.00	1.00	0.00	2.00	174.72	0.28	11	0.00	5.62	85.44	85.44	85.68
L_L-F-20	Rectangular	2662+63.62	F-20	F-6	74.85	74.28	2.00	7.00	4.00	285.09	0.20	640	0.00	8.75	85.82	85.42	84.96
L_L-F-25	Rectangular	2664+00.00	F-25	F-20	75.12	74.85	2.00	7.00	4.00	136.38	0.20	610	0.00	7.86	86.11	85.82	84.48
L_L-F-26	Circular	2664+99.15	F-26	F-25	75.95	75.75	1.00	0.00	3.50	99.15	0.20	34	0.00	6.12	86.12	86.11	84.83
L_L-F-28	Circular	2668+73.98	F-28	F-26	77.20	76.45	1.00	0.00	3.00	374.84	0.20	30	0.00	6.83	86.13	86.12	84.66
L_L-F-29	Circular	2670+00.00	F-29	F-28	77.45	77.20	1.00	0.00	3.00	126.02	0.20	18	0.00	3.45	86.13	86.13	84.03
L_L-F-3	Circular	2679+54.57	F-3	F-14	78.35	78.17	1.00	0.00	2.00	180.37	0.10	17	30.78	5.49	85.42	85.42	84.39
L_L-F-31	Circular	2672+50.00	F-31	F-29	78.45	77.95	1.00	0.00	2.50	250.00	0.20	15	0.00	5.73	86.14	86.13	83.95
L_L-F-32	Circular	2673+14.70	F-32	F-31	79.08	78.95	1.00	0.00	2.00	64.70	0.20	10	16.14	5.28	86.15	86.14	84.18
L_L-F-33	Circular	2674+48.75	F-33	F-32	79.35	79.08	1.00	0.00	2.00	134.05	0.20	13	29.93	3.98	86.16	86.15	84.65
L_L-F-4	Circular	2660+00.00	F-4	F-5	79.50	79.26	1.00	0.00	2.50	84.38	0.28	19	16.26	6.41	85.44	85.43	85.07
L_L-F-5	Circular	2660+84.38	F-5	F-6	78.76	78.18	1.00	0.00	3.00	207.07	0.28	26	16.26	6.45	85.43	85.42	85.36
L_L-F-6	Rectangular	2662+91.44	F-6	F-OUT	74.28	74.25	2.00	8.00	4.00	14.01	0.20	723	0.00	11.86	85.42	85.42	86.09
L_L-F-7	Circular	2666+45.31	F-7	F-6	75.05	74.69	1.00	0.00	4.00	353.87	0.10	48	16.26	3.83	85.42	85.42	86.17
L_L-F-8	Circular	2667+95.31	F-8	F-7	75.20	75.05	1.00	0.00	4.00	150.00	0.10	43	16.26	3.48	85.42	85.42	85.49
L_L-F-9	Circular	2669+45.31	F-9	F-8	75.35	75.20	1.00	0.00	4.00	150.00	0.10	38	16.26	3.60	85.42	85.42	84.82

Table 16.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (100-Year) - Outfalls 9-16

7/12/2011

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_L-F-OUT	Natural	2662+90.99	F-OUT	MH-F2	74.25	74.12	1.00	0.00	0.00	44.00	0.29	655	0.00	17.70	85.42	85.42	86.76
L_L-MH-F1	Circular	2664+30.30	MH-F1	F-25	75.22	75.12	1.00	0.00	4.00	49.95	0.20	408	17.09	32.05	89.67	86.11	85.49
L_L-MH-F2	**Natural**		**MH-F2**	**SYS-F-OUT**	**74.12**	**73.69**	**1.00**	**0.00**	**0.00**	**855.00**	**0.05**	**538**	**16.25**	**3.28**	**85.42**	**85.41**	**86.65**
Outfalls 16																	
L_L-G-10	Circular	2690+74.51	G-10	G-9	75.76	75.55	1.00	0.00	3.00	74.51	0.28	31	16.30	4.98	84.56	84.55	81.96
L_L-G-12	Circular	2692+70.23	G-12	G-10	76.81	76.26	1.00	0.00	2.50	195.72	0.28	22	16.13	5.79	84.56	84.56	82.94
L_L-G-13	Circular	2694+75.10	G-13	G-12	77.88	77.31	1.00	0.00	2.00	204.87	0.28	16	25.23	4.94	84.57	84.56	83.96
L_L-G-15	Circular	2677+73.93	G-15	G-16	78.05	77.70	1.00	0.00	2.50	126.07	0.28	26	23.61	6.05	84.85	84.81	84.05
L_L-G-16	Circular	2679+00.00	G-16	G-18	77.20	76.94	1.00	0.00	3.00	91.51	0.28	28	16.02	6.61	84.81	84.78	83.23
L_L-G-18	Circular	2679+91.51	G-18	G-19	76.44	75.30	1.00	0.00	3.50	407.47	0.28	38	15.99	5.22	84.78	84.68	83.55
L_L-G-19	Circular	2683+98.98	G-19	G-20	75.30	74.88	1.00	0.00	3.50	149.85	0.28	51	15.99	7.62	84.68	84.64	83.28
L_L-G-20	Circular	2685+48.84	G-20	G-21	74.33	73.78	1.00	0.00	4.00	199.30	0.28	57	15.96	6.14	84.64	84.61	82.53
L_L-G-21	Circular	2687+48.14	G-21	G-22	73.78	73.60	1.00	0.00	4.00	61.86	0.28	63	0.00	6.39	84.61	84.60	81.84
L_L-G-22	Circular	2688+10.00	G-22	MH-G2	73.60	73.20	1.00	0.00	4.00	142.87	0.28	67	0.00	8.22	84.60	84.58	81.81
L_L-G-23	Circular	2690+00.00	G-23	MH-G2	74.95	74.82	1.00	0.00	3.00	47.42	0.28	25	0.00	6.50	84.58	84.58	81.74
L_L-G-24	Circular	2690+48.98	G-24	G-23	75.59	75.45	1.00	0.00	2.50	48.98	0.28	21	0.00	6.49	84.58	84.58	81.71
L_L-G-25	Circular	2691+73.98	G-25	G-24	75.94	75.59	1.00	0.00	2.50	125.00	0.28	18	0.00	4.38	84.59	84.58	81.86
L_L-G-26	Circular	2692+78.98	G-26	G-25	76.73	76.44	1.00	0.00	2.00	105.00	0.28	16	29.40	5.09	84.59	84.59	82.39
L_L-G-3	Circular	2682+20.31	G-3	G-4	78.11	77.62	1.00	0.00	2.00	175.00	0.28	11	22.49	3.51	84.56	84.56	84.29
L_L-G-4	Circular	2683+95.31	G-4	G-5	77.62	77.27	1.00	0.00	2.00	125.00	0.28	10	16.25	5.40	84.56	84.56	83.42
L_L-G-5	Circular	2685+20.31	G-5	G-6	76.77	76.49	1.00	0.00	2.50	100.00	0.28	14	16.25	4.14	84.56	84.55	82.79
L_L-G-6	Circular	2686+20.31	G-6	G-7	76.49	76.15	1.00	0.00	2.50	119.69	0.28	17	0.00	4.28	84.55	84.55	82.29
L_L-G-7	Circular	2687+40.00	G-7	MH-G1	76.15	75.70	1.00	0.00	2.50	159.59	0.28	21	0.00	6.57	84.55	84.55	81.83
L_L-G-8	Circular	2689+41.39	G-8	MH-G1	75.39	75.27	1.00	0.00	3.00	41.81	0.28	37	15.98	7.23	84.55	84.55	81.88
L_L-G-9	Circular	2690+00.00	G-9	G-8	75.55	75.39	1.00	0.00	3.00	58.61	0.28	35	15.98	6.02	84.55	84.55	81.73
L_L-G-OUT	Circular	2688+03.42	G-OUT	MH-G3	69.57	69.27	1.00	0.00	6.00	477.00	0.06	130	15.89	6.69	84.53	84.51	82.02
L_L-MH-G1	Circular	2688+99.59	MH-G1	G-OUT	71.39	70.07	1.00	0.00	5.50	415.94	0.32	138	0.00	9.36	84.55	84.53	82.09
L_L-MH-G2	Circular	2689+52.80	MH-G2	MH-G1	72.70	71.86	1.00	0.00	4.50	300.58	0.28	89	0.00	7.38	84.58	84.55	81.76
L_L-MH-G3	Circular		MH-G3	MH-G4	68.77	68.51	1.00	0.00	6.50	518.00	0.05	296	16.01	8.88	84.51	84.28	82.92
L_L-MH-G4	Circular		MH-G4	MH-G5	68.51	68.21	1.00	0.00	6.50	230.00	0.13	296	16.01	8.88	84.28	84.19	82.82
L_L-MH-G5	**Circular**		**MH-G5**	**SYS-G-OUT**	**68.21**	**68.11**	**1.00**	**0.00**	**6.50**	**100.00**	**0.10**	**296**	**16.01**	**8.89**	**84.19**	**84.15**	**81.62**

Table 17.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (100-Year) - Outfalls 17-19

Model: US290_SegA_Sys_BNGLHOL_Prp100-9-03-09.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 17-19																	
L_L-A-1	Circular	2708+59.50	A-1	A-2	74.88	74.49	1	0.00	3.50	388.61	0.10	39	20.01	4.00	85.01	84.86	82.75
L_L-J-A-10	Circular	2738+05.41	A-10	J-A-10	74.08	73.57	1	0.00	4.50	342.60	0.15	58	15.97	3.61	84.21	83.97	81.93
E11504_1	**Rectangular**	**2753+59.67**	**A102**	**E11504.1**	**71.38**	**70.92**	**1**	**8.00**	**5.00**	**221.00**	**0.21**	**310**	**15.95**	**7.71**	**82.91**	**82.35**	**80.50**
L-A102	Rectangular	2720+87.18	A-11	A102	71.81	71.38	1	8.00	5.00	395.00	0.11	297	17.03	7.39	83.84	82.91	82.19
L_L-A-11A	Circular	2731+96.88	A-12	A-11	74.16	74.04	1	0.00	4.00	115.27	0.10	55	16.04	4.36	83.94	83.84	81.79
L_L-J-A-12	Circular	2733+23.85	A-13	J-A-12	75.24	74.92	1	0.00	3.50	318.80	0.10	25	16.52	2.54	84.13	83.99	81.84
L-A-2	Rectangular	2755+15.41	A-2	J-A-2	74.00	73.65	1	4.00	4.00	346.60	0.10	66	16.43	4.12	84.86	84.55	81.67
L_L-A-3	Rectangular		A-3	J-A-5	73.35	73.14	1	6.00	4.00	211.25	0.10	94	16.51	3.90	84.29	84.14	81.67
L_L-A-5	Circular	2741+63.98	A-5	J-A-5	74.78	74.00	1	0.00	3.00	388.75	0.20	28	16.63	3.91	84.70	84.14	81.67
L_L-A-8	Circular	2730+37.82	A-8	J-A-8	75.80	75.41	1	0.00	3.00	256.78	0.15	27	16.54	3.73	84.98	84.76	81.79
L_L-J-A-9	Circular		A-9	J-A-9	74.78	74.43	1	0.00	4.00	351.34	0.10	35	16.51	2.74	84.53	84.34	81.90
L_L-B-1	Circular	2735+39.56	B-1	J-B-2	73.54	73.24	1	0.00	4.00	303.54	0.10	30	16.54	2.36	84.00	83.97	81.67
L_L-B-2	Circular	2738+96.03	B-2	J-B-3	72.35	72.19	1	0.00	4.50	160.18	0.10	37	15.78	2.29	83.92	83.91	81.67
L_L-B-4	Circular		B-4	J-B-3	73.15	72.79	1	0.00	3.00	142.94	0.25	14	16.28	1.89	83.91	83.91	81.17
L_L-B-6	Rectangular	2756+73.03	B-6	B-7	71.91	71.74	1	8.00	4.00	171.43	0.10	133	15.82	4.12	83.72	83.61	81.47
Link322	Rectangular		B-7	MHI-108	70.88	70.38	1	5.00	4.00	225.00	0.22	149	15.77	7.41	83.61	82.87	80.40
Link323	Circular	2706+20.21	B-7A	B-7	74.67	74.25	1	0.00	1.50	167.00	0.25	17	17.03	8.96	87.33	83.61	79.81
L_L-B-8	Circular		B-8	B-7	74.02	72.38	1	0.00	2.00	327.72	0.50	13	15.72	3.96	83.72	83.61	81.67
L_L-B-9	Circular	2728+03.54	B-9	B-8	76.32	76.09	1	0.00	2.00	229.48	0.10	9	20.46	2.95	83.73	83.72	81.89
L_L-BNGL01	Circular	2747+99.00	BNGL01	BNGL02	68.04	67.96	1	0.00	4.00	63.40	0.13	97	15.91	7.69	80.67	80.47	77.83
L_L-BNGL03	Circular	2752+00.34	BNGL02	BNGL03	67.96	67.41	1	0.00	5.00	417.73	0.13	115	17.54	5.79	80.47	79.75	76.72
L-BNGL03	Circular	2733+47.73	BNGL03	MH-8	66.44	66.31	1	0.00	5.50	130.00	0.10	155	15.79	6.47	79.75	79.53	76.67
L-C-1	Circular		C-1	C-2	73.43	73.30	1	0.00	3.00	132.53	0.10	18	21.76	2.54	83.27	83.21	78.51
L_L-C-2	Rectangular		C-2	C-2a	73.30	73.04	1	3.00	3.00	268.46	0.10	33	21.47	3.63	83.21	83.08	78.91
L_L-C-2A	Rectangular	2756+19.68	C-2a	C-3	73.04	72.76	1	4.00	3.00	280.71	0.10	36	21.35	2.96	83.08	82.99	79.85
L-C-4A	Circular		C-3	C-4a	71.37	70.86	1	0.00	4.00	340.00	0.15	58	21.00	4.59	82.99	82.93	79.26
L-C4	Circular		C-4	C-4a	73.14	72.90	1	0.00	2.00	120.00	0.20	15	20.63	4.68	82.95	82.93	80.10
L-MHI-107	Circular		C-4a	MHI-108	70.86	70.38	1	0.00	4.00	207.00	0.23	83	20.60	6.57	82.93	82.87	80.00
L_L-C-3	Circular		C-6	C-3	75.16	75.05	1	0.00	2.00	105.93	0.10	10	21.18	3.26	82.99	82.99	80.15
L_L-J-A-5	Circular	2729+00.29	CNT-01	J-A-5	73.34	72.38	1	0.00	4.00	489.00	0.20	124	19.54	9.74	86.42	84.14	81.83
L_L-CNT-02	Circular		CNT-02	J-B-3	72.19	72.18	1	0.00	4.00	4.00	0.25	102	17.05	7.98	84.03	83.91	80.50
L_L-D-2A	Circular	2752+02.47	D-1	D-2a	70.76	70.49	1	0.00	3.00	273.57	0.10	17	18.33	2.33	80.52	80.49	77.85
L_L-D-2	Circular	2755+00.00	D-2	BNGL02	70.06	69.87	1	0.00	3.00	187.92	0.10	34	18.78	4.74	80.52	80.47	76.19
L_L-BNGL02	Circular	2745+00.00	D-2a	BNGL02	69.99	69.87	1	0.00	3.50	112.13	0.10	34	18.36	3.46	80.49	80.47	76.49
L_L-D-3	Circular	2754+90.00	D-3	J-D-5	72.05	71.75	1	0.00	3.50	299.00	0.10	27	16.03	2.83	80.29	80.19	78.94
L_L-D-3A	Circular	2757+47.22	D-3a	D-3	74.66	73.55	1	0.00	2.00	221.17	0.50	9	16.26	3.82	80.37	80.29	80.05
L_L-D-5	Circular	2749+26.77	D-5	D-5A	70.76	70.04	1	0.00	3.50	287.53	0.25	52	15.96	5.37	79.98	79.77	77.98
L_L-D-5A	Circular	2713+98.09	D-5A	BNGL03	69.54	69.52	1	0.00	4.00	25.41	0.10	55	15.93	4.37	79.77	79.75	76.54
L_L-D-6	Circular	2709+00.55	D-6	J-D-6a	69.41	69.34	1	0.00	3.50	74.93	0.09	32	18.63	3.31	79.59	79.56	75.91
L_L-D-7	Circular	2714+11.25	D-7	D-6	70.07	69.91	1	0.00	3.00	160.94	0.10	16	18.60	2.19	79.63	79.59	76.47
L_L-A-11B	Circular	2732+02.81	J-A-10	A-11	73.57	73.30	1	0.00	4.50	182.63	0.15	58	15.98	3.61	83.97	83.84	82.83
L_L-A-12	Circular	2726+70.85	J-A-12	A-12	74.42	74.16	1	0.00	4.00	268.38	0.10	24	15.99	1.93	83.99	83.94	82.73
L_L-J-A-2	Rectangular	2753+12.47	J-A-2	A-3	73.65	73.35	1	4.00	4.00	299.45	0.10	55	17.23	3.38	84.55	84.29	82.38
L_L-A-11	Rectangular	2735+00.00	J-A-5	Node385	72.38	71.91	1	8.00	5.00	233.00	0.20	202	17.13	5.03	84.14	83.92	81.62
L_L-A-9	Circular	2736+07.66	J-A-8	A-9	75.42	74.95	1	0.00	3.00	312.09	0.15	21	17.79	2.89	84.76	84.53	82.69
L_L-A-10	Circular	2743+00.00	J-A-9	A-10	74.44	74.08	1	0.00	4.00	239.29	0.15	37	17.53	2.89	84.34	84.21	82.77
L_L-J-B-2	Circular		J-B-2	B-2	73.24	72.85	1	0.00	4.00	393.29	0.10	28	15.76	2.20	83.97	83.92	81.67
L_L-J-B-3	Rectangular	2733+57.06	J-B-3	B-6	72.19	71.91	1	8.00	4.00	279.55	0.10	124	15.81	3.84	83.91	83.72	81.65
L_L-J-D-5	Circular	2742+78.83	J-D-5	D-5	71.76	70.75	1	0.00	3.50	403.65	0.25	43	16.02	4.49	80.19	79.98	79.99
L_L-J-D-6A	Circular	2717+68.38	J-D-6a	MH-8	69.34	69.26	1	0.00	3.50	85.37	0.09	32	18.63	3.31	79.56	79.53	76.52
MH10-11	Circular	2702+68.87	MH-10	MH-11	65.79	65.37	1	0.00	5.50	420.00	0.10	189	15.82	7.94	78.40	77.39	76.08
MH10-11	Circular	2725+00.00	MH-10	MH-11	70.33	68.68	1	0.00	3.00	420.00	0.39	38	15.82	5.31	78.40	77.39	76.08
L-MH-11	**Circular**	**2718+00.00**	**MH-11**	**E11504.3**	**65.37**	**65.16**	**1**	**0.00**	**5.50**	**210.00**	**0.10**	**239**	**16.01**	**10.03**	**77.39**	**76.49**	**75.27**

Table 17.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (100-Year) - Outfalls 17-19

Model: US290_SegA_Sys_BNGLHOL_Prp100-9-03-09.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 17-19																	
L-MH-11	**Circular**	**2697+00.00**	**MH-11**	**E11504.3**	**68.68**	**68.47**	**1**	**0.00**	**3.00**	**210.00**	**0.10**	**48**	**16.01**	**6.70**	**77.39**	**76.49**	**75.27**
L-MH-8	Circular	2759+08.16	MH-8	MH-9	66.31	66.13	1	0.00	5.50	180.00	0.10	157	15.77	6.57	79.53	79.23	77.12
L-MH-8	Circular	2705+49.95	MH-8	MH-9	71.42	70.94	1	0.00	2.00	49.07	0.98	20	15.72	6.47	79.53	79.23	77.12
MH9-10	Circular	2712+00.00	MH-9	MH-10	66.13	65.79	1	0.00	5.50	340.00	0.10	189	15.82	7.93	79.23	78.40	76.20
MH9-10	Circular	2713+84.74	MH-9	MH-10	70.94	70.33	1	0.00	3.00	340.00	0.18	38	15.82	5.30	79.23	78.40	76.20
L-MHI-108	Rectangular	2715+00.00	MHI-108	MHI-109	70.38	69.92	1	7.00	5.00	372.00	0.12	188	19.64	5.34	82.87	82.45	80.00
E11504_2	**Rectangular**		**MHI-109**	**E11504.2**	**69.92**	**69.52**	**1**	**7.00**	**5.00**	**261.00**	**0.15**	**192**	**19.59**	**5.44**	**82.45**	**82.00**	**80.80**
Link341	Rectangular		Node385	A-11	71.91	71.81	1	8.00	5.00	49.00	0.20	203	17.24	5.04	83.92	83.84	82.19
Link339	Circular		POND4A	MHI-108	70.58	70.38	1	0.00	5.00	204.00	0.10	62	20.93	3.15	82.87	82.87	81.00
L-POND4B	Circular		POND4B	J-D-5	71.79	71.75	1	0.00	4.00	39.00	0.10	16	16.01	1.28	80.19	80.19	80.00

Table 18.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (100-Year) - Outfalls 20-22

Model: US290_SegA_Sys_BKHSEW43_Prp100-adjust-wat.out **9/8/2009**

Name	Link Type		Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 20-22																	
E115-01.1	**Natural**	**2811+67.66**	**BRCKH01.0**	**BRCKH00.1**	**51.24**	**50.96**	**1**	**0.00**	**0.00**	**114.20**	**0.25**	**9007**	**18.63**	**11.43**	**69.67**	**69.22**	**70.00**
E115-02	Natural	2810+75.92	BRCKH01.1	BRCKH01.0	51.27	51.24	1	0.00	0.00	307.00	0.01	8716	18.63	10.59	71.06	69.67	71.00
E115-01.3	Natural		BRCKH01.3	BRCKHO1.2	51.58	51.39	1	0.00	0.00	254.70	0.07	6312	18.27	7.73	71.91	71.50	72.20
E115-03.1	Natural		BRCKHO1.2	BRCKH01.1	51.39	51.27	1	0.00	0.00	151.00	0.08	8376	18.38	9.58	71.50	71.06	72.80
L_L-COH01	Circular	2799+14.15	COH01	F-2a	62.14	61.80	1	0.00	4.00	172.06	0.20	152	19.09	12.58	72.07	71.21	68.02
Link52	Rectangular	2832+53.36	DET-4C	J-H-4a	57.20	57.09	1	6.00	5.00	110.66	0.10	321	24.23	10.62	72.41	72.39	71.50
L_L-E-1	Circular	2765+99.87	E-1	E-2	65.96	65.56	1	0.00	4.00	400.13	0.10	48	16.32	3.81	75.86	75.48	74.94
L_L-E-10	Circular	2786+12.18	E-10	E-11	62.25	62.06	1	0.00	5.00	187.82	0.10	97	16.26	6.73	72.91	72.91	72.43
L_L-E-11	**Circular**	**2788+00.00**	**E-11**	**E11504.4**	**61.63**	**61.50**	**1**	**0.00**	**5.00**	**63.67**	**0.20**	**114**	**16.26**	**7.62**	**72.91**	**72.91**	**71.27**
Link71	Natural		E11504.3	E11504.4	58.48	58.33	1	0.00	0.00	200.00	0.07	2223	17.52	6.33	73.12	72.91	75.23
Link77	Natural	2788+44.73	E11504.4	E11504.5	58.33	58.02	1	0.00	0.00	600.00	0.05	2193	17.59	6.85	72.91	72.26	75.16
Link75	Natural		E11504.5	E11504.6	58.02	58.01	1	0.00	0.00	42.50	0.02	2528	17.67	6.62	72.26	72.21	75.16
Link74	Natural		E11504.6	E11504.7	58.01	57.34	1	0.00	0.00	428.00	0.16	2141	17.69	6.72	72.21	71.98	72.62
Link73	Natural		E11504.7	E11504.8	57.34	57.23	1	0.00	0.00	63.75	0.17	2088	17.91	6.83	71.98	71.95	72.61
Link72	Natural		E11504.8	BRCKHO1.2	57.23	55.83	1	0.00	0.00	778.00	0.18	2022	18.13	6.79	71.95	71.50	73.29
L_L-E-1a	Circular	2761+99.46	E-1a	E-1	67.36	66.96	1	0.00	3.00	400.41	0.10	23	16.26	4.33	76.13	75.86	76.34
L_L-E-2	Rectangular	2770+00.00	E-2	J-E-2	65.56	65.29	1	4.00	4.00	272.32	0.10	82	16.27	5.09	75.48	75.00	74.53
L_L-E-3	Rectangular	2776+64.05	E-3	E-4	63.53	63.14	1	5.00	4.00	385.95	0.10	102	16.21	5.07	74.35	73.88	72.81
L_L-E-4	Rectangular	2780+50.00	E-4	E-4a	63.14	63.00	1	6.00	4.00	139.77	0.10	127	16.29	5.26	73.88	73.79	72.11
L_L-E-4a	Rectangular	2781+89.77	E-4a	E-5	61.59	61.38	1	7.00	5.00	210.23	0.10	237	16.78	6.74	73.79	73.46	71.86
L_L-E-5	Rectangular	2784+00.00	E-5	J-E-5	61.38	60.98	1	7.00	5.00	399.86	0.10	253	16.59	7.19	73.46	72.83	71.48
L_L-E-6	Circular	2766+67.46	E-6	E-7a	66.17	65.83	1	0.00	3.00	344.00	0.10	26	16.26	4.85	72.94	72.93	76.01
L_L-E-7	Circular	2773+53.94	E-7	E-8	64.49	64.20	1	0.00	4.00	296.06	0.10	50	16.26	5.64	72.93	72.92	74.09
L_L-E-7a	Circular	2770+11.46	E-7a	E-7	65.33	64.99	1	0.00	3.50	342.48	0.10	38	16.26	5.25	72.93	72.93	74.53
L_L-E-8	Circular	2776+50.00	E-8	E-9	63.70	63.50	1	0.00	4.50	200.00	0.10	71	16.26	4.42	72.92	72.92	72.77
L_L-E-9	Circular	2778+50.00	E-9	J-E-9	63.00	62.61	1	0.00	5.00	393.82	0.10	87	16.26	4.42	72.92	72.91	72.10
L_L-F-1	Rectangular	2794+00.00	F-1	F-2a	60.41	59.89	1	7.00	5.00	517.51	0.10	276	15.96	7.86	71.96	71.21	69.54
L_L-F-1a	Rectangular	2792+16.33	F-1a	F-1	60.57	60.39	1	7.00	5.00	183.67	0.10	263	15.95	7.47	72.22	71.96	70.24
L_L-F-2	Rectangular	2800+00.00	F-2	J-F-3	59.80	59.50	1	9.00	5.00	300.08	0.10	303	17.04	6.70	71.11	70.74	69.36
L_L-F-2a	Rectangular	2799+17.51	F-2a	F-2	59.89	59.80	1	9.00	5.00	82.49	0.12	298	17.05	6.58	71.21	71.11	69.68
Link78	Circular	2799+17.51	F-2a	J-F-5	61.80	61.21	1	0.00	4.00	295.00	0.20	139	15.70	11.02	71.21	70.75	69.68
L_L-F-3	Rectangular	2807+00.00	F-3	BRCKH01.0	59.11	58.64	1	9.00	5.00	467.66	0.10	314	17.04	8.31	70.25	69.67	69.36
L_L-F-4	Circular	2793+86.99	F-4	F-5	63.99	63.67	1	0.00	3.00	313.01	0.10	10	0.00	3.94	70.76	70.76	71.06
L_L-F-5	Circular	2797+00.00	F-5	J-F-5	62.68	62.55	1	0.00	4.00	126.23	0.10	37	16.26	7.50	70.76	70.75	69.67
L_L-F-6	Circular	2806+00.00	F-6	J-F-6	62.92	62.52	1	0.00	3.50	400.15	0.10	28	16.26	2.90	70.77	70.76	69.42
Link76	Circular	2806+00.00	F-6	BRCKH01.1	0.05	0.00	1	0.00	0.05	10.00	0.50	0	0.00	0.00	0.00	0.00	69.42
L_L-G-1	Rectangular	2825+00.00	G-1	G-1a	60.16	59.94	1	4.00	4.00	217.95	0.10	64	16.47	3.99	69.88	69.75	69.36
L_L-G-1a	Rectangular	2822+82.05	G-1a	J-G-1a	59.94	59.57	1	4.00	4.00	382.65	0.10	76	16.13	4.74	69.75	69.71	69.36
L_L-G-1b	Rectangular	2815+19.46	G-1b	BRCKH01.0	59.19	58.84	1	5.00	4.00	351.81	0.10	102	16.15	6.65	69.69	69.67	69.36
L_L-G-2	Circular	2827+50.00	G-2	G-1	60.40	60.16	1	0.00	4.00	250.34	0.10	52	16.75	4.09	70.18	69.88	69.36
L_L-G-2a	Circular	2830+56.00	G-2a	G-2	61.21	60.90	1	0.00	3.50	306.00	0.10	34	16.78	4.83	70.48	70.18	69.36
L_L-G-3	Rectangular	2845+64.61	G-3	J-G-3	59.57	59.11	1	8.00	4.00	459.93	0.10	234	24.63	7.24	72.69	72.59	69.36
L_L-H-5a	Rectangular	2838+00.00	G-3a	J-H-5	58.78	58.50	1	6.00	5.00	276.34	0.10	246	24.23	8.16	72.52	72.46	70.03
L_L-G-4	Rectangular	2849+00.00	G-4	G-3	59.90	59.57	1	8.00	4.00	331.39	0.10	211	24.66	6.54	72.76	72.69	69.36
L_L-G-5	Circular	2852+50.00	G-5	G-5a	60.74	60.59	1	0.00	3.50	146.48	0.10	34	24.87	3.50	72.78	72.78	69.36
L_L-G-5a	Circular	2851+00.00	G-5a	G-5b	60.59	60.50	1	0.00	3.50	89.16	0.10	46	24.79	4.72	72.78	72.78	69.36
L_L-G-5b	Rectangular	2850+06.84	G-5b	G-4	60.00	59.90	1	8.00	4.00	102.84	0.10	202	24.83	6.26	72.78	72.76	69.36
L_L-H-1	Rectangular	2814+00.00	H-1	BRCKH01.1	54.43	54.11	1	9.00	7.00	324.08	0.10	587	23.93	10.14	71.29	71.06	69.42
L_L-H-2	Rectangular	2824+00.00	H-2	J-H-2	55.44	55.24	1	9.00	7.00	196.75	0.10	602	24.11	9.51	72.04	71.89	69.66
L_L-H-3	Rectangular	2828+50.00	H-3	H-3b	56.71	56.55	1	6.00	5.00	162.00	0.10	541	24.01	17.88	72.31	72.28	69.36
L_L-H-3a	Rectangular	2826+30.00	H-3a	H-2	55.67	55.44	1	9.00	7.00	230.00	0.10	587	23.93	9.26	72.23	72.04	69.36
L_L-H-3b	Rectangular	2826+88.00	H-3b	H-3a	55.73	55.67	1	9.00	7.00	59.41	0.10	595	23.48	9.39	72.28	72.23	69.36
L_L-H-4a	Rectangular	2831+18.34	H-4a	H-3	56.97	56.70	1	6.00	5.00	268.30	0.10	382	24.05	12.64	72.36	72.31	69.85
L_L-H-5	Circular	2840+70.00	H-5	J-H-5	58.40	58.00	1	0.00	5.00	393.64	0.10	109	24.30	5.52	72.46	72.46	69.48
L_L-H-7	Circular	2845+70.00	H-7	J-H-7	59.39	59.19	1	0.00	4.00	198.30	0.10	62	24.46	4.91	72.46	72.46	69.36

Table 18.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (100-Year) - Outfalls 20-22

Model: US290_SegA_Sys_BKHSEW43_Prp100-adjust-wat.out

9/8/2009

Name	Link Type		Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_L-H-8	Circular	2848+00.00	H-8	H-7	60.12	59.89	1	0.00	3.50	226.00	0.10	58	24.46	6.00	72.46	72.46	69.36
L_L-H-9	Circular	2852+94.91	H-9	H-8	60.61	60.12	1	0.00	3.50	490.91	0.10	45	24.52	4.63	72.46	72.46	68.60
L_LJ-E-2	Rectangular	2772+72.32	J-E-2	E-3	65.29	64.90	1	4.00	4.00	391.73	0.10	81	16.01	6.22	75.00	74.35	74.38
L_LJ-E-5	Rectangular	2787+99.86	J-E-5	F-1a	60.99	60.57	1	7.00	5.00	416.47	0.10	253	16.59	7.19	72.83	72.22	72.32
L_L-E-515	**Circular**	**2798+26.51**	**JE5150100**	**E5150100**	**56.59**	**56.43**	**1**	**0.00**	**4.50**	**82.00**	**0.20**	**179**	**16.01**	**11.51**	**70.08**	**70.00**	**70.39**
L_LJ-E-9	Circular	2782+43.83	J-E-9	E-10	62.61	62.24	1	0.00	5.00	368.29	0.10	87	16.26	4.49	72.91	72.91	73.27
L_LJ-F-3	Rectangular	2803+00.08	J-F-3	F-3	59.51	59.11	1	9.00	5.00	399.92	0.10	303	17.04	6.70	70.74	70.25	70.19
L_LJ-F-5	Circular	2798+26.23	J-F-5	JE5150100	56.65	56.59	1	0.00	2.50	31.40	0.20	179	16.01	35.81	70.75	70.08	70.12
L_LJ-F-6	Circular	2801+99.85	J-F-6	J-F-5	62.52	62.12	1	0.00	3.50	373.62	0.11	28	16.26	5.17	70.76	70.75	71.42
L_L-JG-1a	Rectangular	2818+99.40	J-G-1a	G-1b	59.57	59.19	1	4.00	4.00	379.94	0.10	76	16.13	4.74	69.71	69.69	70.06
L_LJ-G-3	Rectangular	2841+00.59	J-G-3	G-3a	59.11	58.81	1	8.00	4.00	296.54	0.10	233	24.63	7.25	72.59	72.52	71.58
L_LJ-G-3a	Circular	2834+13.32	J-G-3a	G-2a	62.06	61.71	1	0.00	3.00	357.48	0.10	20	16.01	4.44	70.71	70.48	70.75
L_LJ-H-1a	Rectangular	2818+06.46	J-H-1	H-1	54.84	54.43	1	9.00	7.00	406.46	0.10	595	24.12	9.38	72.50	71.29	71.96
L_LJ-H-1	Rectangular	2822+03.34	J-H-2	J-H-1	55.24	54.84	1	9.00	7.00	396.95	0.10	587	23.93	9.27	71.89	72.44	70.27
L_L-J-H-4A	Rectangular	2832+43.53	J-H-4a	H-4a	57.10	56.97	1	6.00	5.00	125.18	0.10	366	24.21	12.10	72.39	72.36	70.48
Link1	Rectangular		J-H-4b	DET-4C	57.85	57.74	1	7.00	5.00	105.58	0.10	315	24.27	8.94	72.43	72.41	71.68
L_LJ-H-5	Rectangular	2836+72.36	J-H-5	J-H-4b	58.00	57.85	1	7.00	5.00	148.98	0.10	325	24.29	9.25	72.46	72.43	71.07
L_LJ-H-7	Circular	2843+67.70	J-H-7	H-5	59.19	58.90	1	0.00	4.50	293.70	0.10	73	24.41	4.56	72.46	72.46	69.36
L_L-MH-12s	Circular	2835+79.64	MH-12s	J-G-3a	62.06	61.90	1	0.00	3.00	166.32	0.10	20	16.01	2.79	70.83	70.71	70.87
L_L-MH-14s	Circular	2781+98.83	MH-14s	E-4a	63.39	63.37	1	0.00	5.00	27.75	0.09	152	17.55	7.79	73.89	73.79	71.37
L_L-MH-18s	Circular	2851+44.26	MH-18s	G-5b	62.42	61.92	1	0.00	4.00	189.11	0.27	188	24.88	14.86	73.24	72.78	68.35
L_L-MH-7s	Circular	2828+96.25	MH-7s	H-3b	56.11	55.73	1	0.00	7.00	364.99	0.10	480	23.49	12.36	72.94	72.28	71.63
L_L-W43rd	Circular	2783+29.32	W43rd	MH-14s	63.74	63.39	1	0.00	5.00	173.87	0.20	149	17.22	7.54	74.44	73.89	72.57

Table 13.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (10-Year) - Outfalls 1-4

Model: 10YR_SegE_Prop.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 1-4																	
L-A-2	Rectangular	2123+99.96	A-1	EX-2	132.81	132.77	1.00	4.00	2.00	83.05	0.05	-32	15.91	3.51	137.04	137.02	136.81
L-A-2	Trapezoidal	2123+99.96	A-1	EX-2	136.31	136.80	1.00	15.00	0.50	83.05	-0.59	4	15.94	1.40	137.04	137.02	136.81
L-A-32	Circular	2132+49.96	A-10	MH-1	131.39	131.16	1.00	0.00	3.00	229.95	0.10	23	15.79	3.54	136.34	136.90	136.42
L-A-32	Trapezoidal	2132+49.96	A-10	MH-1	135.50	137.00	1.00	0.00	0.50	229.95	-0.65	0	0.00	0.00	136.34	136.84	136.42
L-A-35	Circular	2136+20.00	A-11	MH-2	132.62	132.44	1.00	0.00	1.50	64.27	0.28	11	15.89	6.18	137.16	135.95	137.07
L-A-36	Circular	2139+20.00	A-12	EX-8	132.24	132.09	1.00	0.00	1.50	53.88	0.28	15	15.94	8.63	137.01	136.47	136.80
L-A-40	Rectangular	2143+99.94	A-13	MH-4	130.05	129.86	1.00	6.00	3.00	151.27	0.13	93	15.89	5.15	135.34	135.60	135.42
L-A-39	Circular	2142+20.00	A-14	MH-3	131.86	131.70	1.00	0.00	1.50	56.75	0.28	14	15.89	7.69	136.62	135.47	136.46
L-A-42	Circular	2145+20.00	A-15	MH-4	131.52	131.36	1.00	0.00	1.50	56.88	0.28	12	15.88	6.69	136.18	135.60	136.16
L-A-43	Circular	2148+20.00	A-16	MH-5	131.13	130.97	1.00	0.00	1.50	56.88	0.28	18	15.94	9.81	136.03	135.80	135.82
L-A-45	Rectangular	2152+99.93	A-17	A-18	127.67	127.02	1.00	6.00	4.00	650.00	0.10	111	15.94	4.70	134.69	134.51	134.37
L-A-46	Rectangular	2159+49.93	A-18	A-19	127.02	126.42	1.00	6.00	4.00	600.00	0.10	120	15.98	4.98	134.51	133.67	134.20
L-A-47	Rectangular	2165+49.93	A-19	A-20	126.42	125.72	1.00	6.00	4.00	700.00	0.10	126	15.92	5.22	133.67	133.29	133.30
L-A-4	Rectangular	2126+99.96	A-2	EX-3	132.66	132.60	1.00	4.00	2.00	86.07	0.07	-30	15.91	3.40	136.69	136.67	136.51
L-A-4	Trapezoidal	2126+99.96	A-2	EX-3	136.01	136.27	1.00	22.50	0.50	86.07	-0.30	14	15.96	1.84	136.69	136.67	136.51
L-A-48	Rectangular	2172+49.93	A-20	A-27	125.72	124.49	1.00	6.00	4.00	950.00	0.13	126	15.91	5.22	133.29	132.07	132.95
L-A-50	Circular	2160+00.00	A-21	A-22	129.50	128.89	1.00	0.00	2.50	518.74	0.12	11	15.79	2.87	132.03	131.72	134.50
L-A-51	Circular	2165+18.74	A-22	EX-9	128.89	128.51	1.00	0.00	2.50	130.07	0.29	28	16.01	6.90	131.72	131.20	132.50
L-A-14	Rectangular	2170+00.00	A-23	EX-10	128.18	127.94	1.00	6.00	3.00	228.31	0.11	39	16.06	3.60	131.14	131.24	133.00
L-A-16	Rectangular	2177+18.74	A-24	EX-11	127.47	127.33	1.00	6.00	3.00	136.16	0.10	42	16.07	3.70	130.97	130.92	134.30
L-A-18	Rectangular	2180+42.96	A-25	EX-12	127.16	127.06	1.00	6.00	3.00	116.71	0.09	45	16.07	4.44	130.85	130.80	134.31
L-A-20	Rectangular	2183+22.96	A-26	EX-13	125.29	123.00	1.00	6.00	3.00	215.39	1.06	49	16.07	3.05	130.73	130.56	133.64
L-A-49	Rectangular	2181+99.93	A-27	A-28	124.49	123.79	1.00	6.00	4.00	400.68	0.17	137	15.91	5.67	132.07	130.48	132.07
L-A-95	Rectangular	2186+00.59	A-28	MH-13	122.79	122.77	2.00	5.00	5.00	12.00	0.17	328	16.01	6.55	130.48	130.37	131.47
L-A-58	Circular	2186+99.93	A-29	A-28	123.14	123.04	1.00	0.00	4.00	99.42	0.10	41	15.70	4.24	130.47	130.49	131.17
L-A-7	Rectangular	2130+99.96	A-3	EX-5	132.45	132.38	1.00	5.00	2.00	85.76	0.08	40	15.92	3.99	136.33	136.25	136.45
L-A-7	Trapezoidal	2130+99.96	A-3	EX-5	135.95	136.42	1.00	38.00	0.50	150.00	-0.31	0	0.00	0.00	136.33	136.33	136.45
L-A-93	Rectangular	2185+67.90	A-30	EX-14	122.88	122.87	2.00	5.00	5.00	10.99	0.09	148	16.01	2.96	130.50	130.59	130.00
L-A-56	Circular	2192+99.90	A-31	MH-8	123.74	123.44	1.00	0.00	4.00	299.52	0.10	35	15.70	3.63	130.82	130.61	130.87
L-A-23	Circular	2192+45.28	A-32	EX-18	124.10	123.85	1.00	0.00	3.50	178.37	0.14	20	16.01	2.04	130.77	130.69	131.75
L-A-27	Circular	2194+46.98	A-33	A-32	124.39	124.10	1.00	0.00	3.50	200.36	0.14	19	16.01	1.96	130.85	130.77	133.55
L-A-54	Circular	2197+99.87	A-34	MH-7	124.23	123.97	1.00	0.00	3.50	263.57	0.10	29	15.71	3.57	130.80	130.85	130.77
L-A-52	Circular	2203+99.84	A-35	MH-6	125.00	124.56	1.00	0.00	2.50	339.95	0.13	16	17.38	3.36	130.69	130.76	129.54
L-A-52	Trapezoidal	2203+99.84	A-35	MH-6	129.04	130.61	1.00	26.00	0.50	339.95	-0.46	2	16.36	0.65	130.69	130.76	129.54
L-A-61	Circular	2197+75.87	A-36	A-34	125.27	125.23	1.00	0.00	2.50	40.99	0.10	15	15.69	3.07	130.84	130.80	132.00
L-A-60	Circular	2200+59.70	A-37	A-36	126.06	125.77	1.00	0.00	2.00	287.37	0.10	10	15.69	3.11	131.09	130.84	131.90
L-A-59	Circular	2203+43.32	A-38	A-37	126.85	126.56	1.00	0.00	1.50	287.16	0.10	4	15.69	2.48	132.05	131.09	133.00
L-A-62	Circular	2123+74.32	A-39	A-40	135.50	134.94	1.00	0.00	1.50	190.00	0.29	4	16.36	2.58	139.00	138.96	140.00
L-A-62	Trapezoidal	2123+74.32	A-39	A-40	138.68	138.49	1.00	5.00	0.50	190.00	0.10	1	16.02	0.26	139.00	138.96	140.00
L-A-9	Rectangular	2133+99.95	A-4	EX-6	132.21	132.11	1.00	5.00	2.00	82.87	0.12	38	16.24	4.14	136.13	136.95	136.45
L-A-63	Circular	2125+64.32	A-40	A-41	134.94	134.35	1.00	0.00	1.50	200.20	0.29	6	15.77	3.93	138.96	138.85	140.00
L-A-63	Trapezoidal	2125+64.32	A-40	A-41	138.49	138.00	1.00	5.00	0.50	200.20	0.24	2	16.05	0.50	138.96	138.85	140.00
L-A-64	Circular	2127+64.32	A-41	A-42	133.85	133.28	1.00	0.00	2.00	200.20	0.28	10	15.78	3.86	138.85	139.75	138.50
L-A-65	Circular	2129+64.32	A-42	A-43	133.28	132.39	1.00	0.00	2.00	299.43	0.30	13	15.77	4.59	139.75	138.12	139.75
L-A-66	Circular	2132+63.53	A-43	A-44	131.90	131.35	1.00	0.00	2.50	277.61	0.20	18	15.77	4.31	138.12	137.85	137.50
L-A-67	Circular	2135+40.00	A-44	MH-9	130.85	130.79	1.00	0.00	3.00	45.00	0.13	27	15.76	4.26	137.85	138.67	137.00
L-A-69	Circular	2141+00.00	A-45	A-46	129.96	129.37	1.00	0.00	3.00	400.00	0.15	35	15.80	4.93	137.39	136.44	137.87
L-A-69	Trapezoidal	2141+00.00	A-45	A-46	137.37	135.77	1.00	36.00	0.50	400.00	0.40	0	15.77	0.32	137.39	136.44	137.87
L-A-72	Circular	2145+00.00	A-46	MH-10	128.87	128.71	1.00	0.00	3.50	164.47	0.10	46	16.66	4.71	136.44	136.37	136.27
L-A-72	Trapezoidal	2145+00.00	A-46	MH-10	135.77	136.34	1.00	38.00	0.50	164.47	-0.35	6	16.26	0.99	136.44	136.43	136.27
L-A-75	Circular	2150+00.00	A-47	A-48	127.88	127.28	1.00	0.00	4.00	600.00	0.10	63	15.81	4.99	136.08	135.51	135.92
L-A-76	Circular	2156+00.00	A-48	A-52	127.28	126.68	1.00	0.00	4.00	600.00	0.10	68	15.81	5.35	135.51	134.92	135.22
L-A-70	Circular	2143+00.00	A-49	A-50	132.02	130.86	1.00	0.00	1.50	400.00	0.29	7	15.78	4.16	138.08	136.95	137.97
L-A-70	Trapezoidal	2143+00.00	A-49	A-50	135.00	134.50	1.00	0.00	2.00	400.00	0.13	0	15.77	0.16	138.08	136.95	137.97
L-A-11	Rectangular	2137+49.94	A-5	EX-7	130.85	130.75	1.00	5.00	3.00	79.71	0.13	63	15.83	4.77	135.90	136.14	136.07

Table 13.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (10-Year) - Outfalls 1-4

Model: 10YR_SegE_Prop.xp

9/8/2009

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-A-73	Circular	2147+00.00	A-50	MH-10	129.86	129.71	1.00	0.00	2.50	54.00	0.28	26	15.78	5.67	136.95	136.37	137.60
L-A-71	Circular	2151+00.00	A-51	A-50	132.02	130.86	1.00	0.00	1.50	400.00	0.29	6	15.79	3.72	137.63	136.95	137.05
L-A-71	Trapezoidal	2151+00.00	A-51	A-50	135.00	134.50	1.00	0.00	2.00	400.00	0.13	0	16.04	0.14	137.63	136.95	137.05
L-A-78	Circular	2162+00.00	A-52	A-53	126.68	125.79	1.00	0.00	4.00	600.00	0.15	65	15.92	5.17	134.92	133.94	134.52
L-A-80	Circular	2168+00.00	A-53	E-8	125.79	125.17	1.00	0.00	4.00	414.73	0.15	73	16.27	5.80	133.93	133.06	134.52
L-A-82	Rectangular	2177+00.00	A-54	A-59	123.95	123.57	1.00	5.00	4.00	440.58	0.09	89	16.02	4.42	131.73	131.22	134.17
L-A-88	Circular	2186+00.00	A-55	MH-11	123.70	123.60	1.00	0.00	2.50	68.57	0.15	10	17.18	2.47	130.57	130.58	133.12
L-A-77	Circular	2162+35.58	A-56	A-52	128.23	128.18	1.00	0.00	2.50	35.00	0.14	37	16.73	7.52	134.95	134.92	132.00
L-A-79	Circular	2168+35.58	A-57	A-53	127.86	127.79	1.00	0.00	2.00	35.00	0.20	14	16.71	4.74	133.94	133.93	132.00
L-A-81	Circular	2177+35.58	A-58	A-54	126.00	125.95	1.00	0.00	2.50	35.00	0.14	17	15.90	4.62	131.85	131.73	132.00
L-A-83	Rectangular	2181+40.68	A-59	MH-11	123.57	123.23	1.00	5.00	4.00	390.97	0.09	93	16.02	4.61	131.21	130.58	134.65
L-A-28	Circular	2124+39.96	A-6	A-7	134.65	134.09	1.00	0.00	1.50	190.06	0.29	5	15.93	2.87	137.82	137.01	138.29
L-A-28	Trapezoidal	2124+39.96	A-6	A-7	137.79	136.98	1.00	0.00	0.50	190.06	0.43	0	15.92	0.08	137.82	137.01	138.29
L-A-90	Rectangular	2185+67.08	A-60	EX-15	123.17	123.02	2.00	5.00	5.00	102.50	0.15	95	16.01	1.89	130.57	130.55	131.00
L-A-86	Circular	2193+50.00	A-61	MH-12	125.69	124.97	1.00	0.00	2.00	363.08	0.20	9	17.99	3.36	130.16	130.36	132.59
L-A-84	Circular	2198+00.00	A-62	A-63	127.50	126.62	1.00	0.00	1.50	300.20	0.29	5	15.76	3.47	129.83	129.81	131.02
L-A-85	Circular	2195+00.00	A-63	A-61	126.62	126.18	1.00	0.00	1.50	150.18	0.29	-10	15.98	5.11	129.81	130.16	132.07
L-A-29	Circular	2126+29.95	A-7	A-8	134.09	133.50	1.00	0.00	1.50	200.07	0.29	6	15.78	3.82	137.01	136.76	139.00
L-A-29	Trapezoidal	2126+29.95	A-7	A-8	136.98	136.00	1.00	5.00	1.00	200.07	0.49	0	16.08	0.06	137.01	136.76	139.00
L-A-30	Circular	2128+29.95	A-8	A-9	133.00	132.61	1.00	0.00	2.00	200.25	0.19	13	16.24	4.22	136.76	137.23	137.50
L-A-30	Trapezoidal	2128+29.95	A-8	A-9	136.00	137.00	1.00	0.00	0.50	200.25	-0.50	0	15.92	0.00	136.76	137.23	137.50
L-A-31	Circular	2130+29.95	A-9	A-10	132.11	131.89	1.00	0.00	2.50	218.51	0.10	19	16.10	3.76	137.23	136.34	139.00
L-A-31	Trapezoidal	2130+29.95	A-9	A-10	137.00	135.50	1.00	0.00	0.50	218.51	0.69	0	15.92	0.73	137.23	136.34	139.00
L-B-1	Circular	2203+00.00	B-1	B-2	126.98	126.25	1.00	0.00	1.50	250.02	0.29	4	16.80	3.44	128.00	128.24	130.67
OL-B-1	Trapezoidal	2203+00.00	B-1	B-3	130.17	126.80	1.00	100.00	0.50	200.00	1.69	0	0.00	0.00	128.00	128.31	130.67
L-B-19	Circular	2215+50.00	B-10	MH-17	124.50	123.80	1.00	0.00	2.00	242.88	0.29	16	16.29	5.11	128.47	127.86	127.50
L-B-24	Circular	2212+99.84	B-11	MH-18	123.00	122.95	1.00	0.00	3.00	48.55	0.10	21	16.27	4.13	127.86	127.82	129.91
L-B-26	Circular	2215+49.83	B-12	MH-19	122.85	122.69	1.00	0.00	1.50	57.22	0.28	6	15.75	3.65	127.81	127.73	127.89
L-B-26	Trapezoidal	2215+49.83	B-12	MH-19	127.39	128.47	1.00	100.00	0.50	57.22	-1.89	0	0.00	0.00	127.81	127.73	127.89
L-B-28	Circular	2217+63.59	B-13	MH-20	122.31	121.95	1.00	0.00	2.00	114.44	0.31	11	16.00	3.39	127.85	127.63	134.13
L-B-31	Circular	2226+61.23	B-14	MH-22	120.51	120.34	1.00	0.00	2.50	82.38	0.21	18	16.00	3.59	127.06	126.91	131.62
L-B-34	Circular	2237+42.45	B-15	MH-24	119.72	119.52	1.00	0.00	2.00	91.98	0.22	13	16.00	4.01	125.74	125.52	129.77
L-B-36	Circular	2219+23.88	B-16	B-17	122.27	121.98	1.00	0.00	2.00	138.10	0.21	2	15.60	1.56	125.84	125.58	128.27
L-B-37	Circular	2220+61.73	B-17	B-18	121.98	121.71	1.00	0.00	2.00	133.13	0.20	5	15.62	2.16	125.58	125.49	127.72
L-B-38	Circular	2221+94.66	B-18	B-19	121.21	120.94	1.00	0.00	2.50	136.19	0.20	6	15.63	1.71	125.49	125.47	127.19
L-B-39	Circular	2223+30.73	B-19	B-20	120.44	120.32	1.00	0.00	3.00	69.09	0.17	8	15.63	1.06	125.47	125.47	126.64
L-B-2	Circular	2205+50.00	B-2	MH-14	126.25	126.18	1.00	0.00	1.50	25.89	0.27	5	16.78	4.14	128.24	128.24	129.75
L-B-2	Trapezoidal	2205+50.00	B-2	MH-14	129.25	129.30	1.00	26.00	0.50	25.89	-0.19	0	0.00	0.00	128.24	128.24	129.75
L-B-40	Circular	2223+99.80	B-20	B-21	120.32	120.11	1.00	0.00	3.00	149.31	0.14	10	15.62	1.40	125.47	125.46	126.36
L-B-41	Circular	2225+49.09	B-21	MH-25	120.11	119.94	1.00	0.00	3.00	107.21	0.16	12	15.62	1.66	125.46	125.45	126.81
L-B-43	Circular	2229+17.92	B-22	B-23	119.06	118.86	1.00	0.00	3.50	132.68	0.15	13	15.61	1.35	125.43	125.41	126.83
L-B-44	Circular	2230+51.50	B-23	B-24	118.86	118.66	1.00	0.00	3.50	124.85	0.16	15	15.61	1.51	125.41	125.41	126.36
L-B-45	Circular	2231+77.36	B-24	B-25	118.16	118.06	1.00	0.00	4.00	94.33	0.11	18	15.61	1.39	125.41	125.40	126.11
L-B-47	Circular	2232+71.79	B-25	B-27	118.06	117.83	1.00	0.00	4.00	234.81	0.10	22	15.68	1.77	125.40	125.38	126.44
L-B-46	Circular	2232+72.57	B-26	B-25	120.85	120.58	1.00	0.00	1.50	44.56	0.61	4	15.75	3.27	125.45	125.40	126.44
L-B-48	Circular	2235+06.59	B-27	MH-26	117.83	117.76	1.00	0.00	4.00	71.21	0.10	25	15.77	1.99	125.38	125.37	126.68
L-B-50	Circular	2237+15.12	B-28	MH-27	117.62	117.40	1.00	0.00	4.00	78.08	0.28	27	15.77	2.11	125.35	125.33	128.80
L-B-55	Circular	2239+99.76	B-29	MH-29	118.70	118.60	1.00	0.00	3.50	108.51	0.09	31	15.60	3.18	125.37	125.36	129.79
L-B-3	Circular	2205+75.55	B-3	MH-14	123.80	123.68	1.00	0.00	2.00	46.11	0.26	16	15.52	5.74	128.31	128.24	127.30
L-B-3	Trapezoidal	2205+75.55	B-3	MH-14	126.80	129.30	1.00	100.00	0.50	46.11	-5.42	0	0.00	0.00	128.31	128.24	127.30
L-B-54	Circular	2243+99.75	B-30	B-29	119.70	119.20	1.00	0.00	3.00	399.90	0.13	28	15.60	3.97	125.77	125.37	129.79
L-B-62	Rectangular	2238+57.26	B-31	MH-28	116.90	116.88	2.00	7.00	5.00	45.02	0.04	311	16.00	4.42	125.39	125.36	129.00
L-B-53	Circular	2248+51.07	B-32	B-30	120.15	119.70	1.00	0.00	3.00	451.71	0.10	21	15.60	2.92	126.06	125.77	127.28
L-B-56	Circular	2246+11.81	B-33	MH-30	120.74	119.80	1.00	0.00	2.50	313.78	0.30	3	15.75	1.37	125.48	125.48	129.00
L-B-63	Rectangular	2237+85.19	B-34	B-31	116.95	116.90	2.00	7.00	5.00	108.22	0.05	236	15.54	3.37	125.44	125.39	129.90
L-B-57	Circular	2242+55.19	B-35	MH-30	119.55	119.30	1.00	0.00	3.00	120.47	0.21	16	16.00	2.23	125.54	125.48	131.02
L-B-52	Circular	2254+89.69	B-36	B-32	121.60	120.65	1.00	0.00	2.50	639.00	0.15	13	15.60	3.19	126.55	126.06	126.11
L-B-5	Circular	2208+00.00	B-37	B-38	121.75	121.06	1.00	0.00	3.50	699.93	0.10	31	16.75	3.21	128.26	127.91	129.58
L-B-6	Circular	2215+00.00	B-38	B-39	121.06	120.71	1.00	0.00	3.50	349.63	0.10	39	15.53	4.09	127.91	127.66	130.15

Table 13.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (10-Year) - Outfalls 1-4

Model: 10YR_SegE_Prop.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-B-6	Trapezoidal	2215+00.00	B-38	B-39	128.73	127.50	1.00	26.00	0.50	349.63	0.35	0	0.00	0.00	127.91	127.66	130.15
L-B-7	Circular	2218+50.00	B-39	B-40	120.21	120.06	1.00	0.00	4.00	149.93	0.10	49	15.53	3.93	127.66	127.64	128.00
L-B-7	Trapezoidal	2218+50.00	B-39	B-40	127.50	128.03	1.00	26.00	0.50	149.93	-0.35	0	0.00	0.00	127.66	127.66	128.00
L-B-22	Circular	2206+49.84	B-4	B-5	124.75	124.62	1.00	0.00	2.50	87.78	0.15	17	16.23	3.36	129.01	128.89	129.39
L-B-22	Trapezoidal	2206+49.84	B-4	B-5	128.89	129.06	1.00	62.00	0.50	87.78	-0.19	0	0.00	0.00	129.01	129.01	129.39
L-B-8	Circular	2220+00.00	B-40	MH-15	120.06	119.76	1.00	0.00	4.00	299.54	0.10	55	15.53	4.37	127.63	127.54	129.50
L-B-10	Circular	2227+00.00	B-41	B-42	119.36	119.16	1.00	0.00	4.00	199.88	0.10	68	15.53	5.36	127.15	126.78	128.18
L-B-10	Trapezoidal	2227+00.00	B-41	B-42	127.68	126.98	1.00	26.00	0.50	199.88	0.35	0	0.00	0.00	126.78	126.78	128.18
L-B-12	Circular	2229+00.00	B-42	B-44	118.66	118.11	1.00	0.00	4.50	549.90	0.10	86	15.55	5.40	126.78	125.95	127.48
L-B-11	Circular	2229+00.00	B-43	B-42	122.50	122.36	1.00	0.00	2.00	49.00	0.29	17	16.02	5.35	127.04	126.78	126.50
L-B-13	Circular	2234+50.00	B-44	B-45	118.11	117.96	1.00	0.00	4.50	150.00	0.10	96	15.55	5.80	125.95	125.68	127.03
L-B-15	Circular	2236+00.00	B-45	MH-16	117.96	117.83	1.00	0.00	4.50	93.01	0.14	112	15.54	6.71	125.68	125.48	126.13
L-B-14	Circular	2236+00.00	B-46	B-45	121.00	120.90	1.00	0.00	2.00	49.00	0.20	10	16.26	3.29	125.74	125.68	125.00
L-B-87	Rectangular	2238+00.00	B-47	MH-16	117.12	117.02	1.00	5.00	5.00	107.15	0.09	123	15.55	4.91	125.55	125.48	126.83
L-B-93	Circular	2253+50.00	B-48	B-57	122.45	122.25	1.00	0.00	1.50	69.59	0.29	5	17.11	3.20	126.47	126.27	147.45
L-B-81	Circular	2250+50.00	B-49	MH-40	123.21	123.00	1.00	0.00	1.50	73.76	0.28	5	15.75	3.41	126.21	126.17	143.53
L-B-23	Circular	2207+37.62	B-5	B-11	124.62	123.50	1.00	0.00	2.50	562.35	0.20	19	15.91	3.76	128.89	127.86	130.50
L-B-92	Circular	2247+50.00	B-50	B-55	122.20	122.00	1.00	0.00	1.50	67.32	0.30	6	15.53	5.52	126.08	126.03	136.52
L-B-91	Circular	2244+52.35	B-51	B-54	123.15	123.00	1.00	0.00	1.50	55.53	0.27	5	15.75	3.39	125.95	125.91	130.55
L-B-90	Circular	2241+50.00	B-52	MH-42	124.38	124.25	1.00	0.00	1.50	48.28	0.27	5	15.75	3.95	125.76	125.76	128.87
L-B-88	Circular	2239+25.37	B-53	MH-41	123.59	123.50	1.00	0.00	1.50	33.83	0.27	4	15.75	3.32	125.65	125.63	128.07
L-B-85	Rectangular	2244+00.40	B-54	MH-42	117.71	117.43	1.00	5.00	5.00	288.08	0.10	107	16.56	4.28	125.91	125.76	126.73
L-B-84	Rectangular	2246+50.00	B-55	B-54	117.96	117.71	1.00	5.00	5.00	249.44	0.10	99	16.55	3.96	126.03	125.91	125.78
L-B-84	Trapezoidal	2246+50.00	B-55	B-54	125.28	126.23	1.00	26.00	0.50	249.44	-0.38	0	0.00	0.00	126.03	125.91	125.78
L-B-83	Circular	2248+88.78	B-56	B-55	118.19	117.96	1.00	0.00	4.50	238.64	0.10	79	16.81	4.93	126.13	126.03	127.00
L-B-79	Circular	2252+70.00	B-57	MH-39	118.55	118.43	1.00	0.00	4.50	127.53	0.09	75	16.81	4.72	126.27	126.22	125.82
L-B-76	Circular	134+95.99	B-58	MH-37	118.70	118.68	1.00	0.00	4.50	30.20	0.07	74	16.97	4.63	126.32	126.34	127.20
L-B-75	Circular	133+95.00	B-59	B-58	118.80	118.70	1.00	0.00	4.00	101.07	0.10	84	17.04	6.63	126.33	126.32	127.00
L-B-75	Trapezoidal	133+95.00	B-59	B-58	125.04	125.50	1.00	100.00	0.50	101.07	-0.46	39	16.64	1.22	126.33	126.32	127.00
L-B-21	Circular	2210+40.78	B-6	MH-18	123.59	122.98	1.00	0.00	1.50	271.53	0.22	5	15.75	2.93	128.10	127.82	131.29
L-B-74	Circular	132+58.23	B-60	B-59	118.93	118.80	1.00	0.00	4.00	136.78	0.10	68	17.10	5.38	126.34	126.33	125.09
L-B-74	Trapezoidal	132+58.23	B-60	B-59	124.59	125.04	1.00	50.00	0.50	136.78	-0.33	32	16.88	1.35	126.34	126.33	125.09
L-B-73	Circular	131+55.11	B-61	B-60	119.00	118.93	1.00	0.00	4.00	103.43	0.07	62	16.92	4.90	126.38	126.34	125.71
L-B-72	Circular	129+60.43	B-62	B-61	119.24	119.00	1.00	0.00	3.50	195.84	0.12	60	17.09	6.25	126.49	126.38	125.14
L-B-70	Circular	128+19.55	B-63	MH-36	119.37	119.28	1.00	0.00	3.50	96.25	0.09	72	17.09	7.31	126.54	126.51	126.00
L-B-68	Circular	124+89.71	B-64	MH-35	119.75	119.58	1.00	0.00	3.00	117.70	0.14	28	17.08	3.95	126.61	126.57	125.50
Link749	Trapezoidal	124+89.71	B-64	Node755	0.05	0.00	1.00	0.00	0.05	10.00	0.50	5	16.19	0.00	###########	###########	125.50
L-B-66	Circular	123+16.86	B-65	MH-34	120.51	120.34	1.00	0.00	2.50	173.43	0.10	20	17.08	3.95	127.33	127.75	127.31
L-B-16	Circular	2208+45.57	B-7	B-8	126.81	126.61	1.00	0.00	1.50	200.00	0.10	3	15.78	2.00	128.26	128.19	130.32
L-B-17	Circular	2210+45.57	B-8	B-9	126.61	126.00	1.00	0.00	1.50	200.16	0.30	5	15.77	3.81	128.19	127.92	131.02
L-B-18	Circular	2212+45.57	B-9	MH-17	125.50	125.32	1.00	0.00	2.00	63.80	0.28	10	15.76	4.59	127.92	127.86	128.50
BF63-BF61	Natural		B-F63	Node458	123.30	123.26	1.00	5.00	5.10	40.00	0.10	4	15.48	2.15	126.09	126.09	128.91
BF63-BF65	Circular		B-F63	B-F65	123.30	123.00	3.00	0.00	2.50	90.00	0.33	101	16.04	6.57	126.09	125.50	128.91
BF63-BF65	Trapezoidal		B-F63	B-F65	128.41	128.41	1.00	100.00	0.50	92.00	0.00	0	0.00	0.00	125.50	125.50	128.91
L-C-8	Circular	142+00.00	C-1	C-3	121.00	120.50	1.00	0.00	2.00	500.13	0.10	7	16.02	2.73	122.58	122.09	125.08
L-C-5	Circular	157+00.00	C-10	C-12	117.86	117.36	1.00	0.00	3.50	500.01	0.10	49	16.00	5.04	123.16	121.99	124.50
L-C-13	Circular	162+00.27	C-11	C-13	116.36	115.81	1.00	0.00	4.00	553.84	0.10	44	16.04	4.34	120.55	120.07	124.50
L-C-6	Circular	162+00.00	C-12	C-14	117.36	116.70	1.00	0.00	3.50	553.95	0.12	63	16.01	6.53	121.99	119.95	124.50
L-C-14	Circular	167+53.42	C-13	C-14	115.81	115.70	1.00	0.00	4.00	86.00	0.13	56	16.04	6.01	120.07	119.95	125.27
L-C-7	Rectangular	167+53.31	C-14	C-15	114.37	114.27	1.00	5.00	5.00	129.44	0.08	131	16.02	5.25	119.95	119.78	125.27
D31-D33	Rectangular	168+82.59	C-15	D33	114.27	114.07	1.00	6.00	5.00	352.00	0.06	145	16.02	4.84	119.78	119.37	122.43
L-C-1	Circular	142+00.00	C-2	C-4	121.00	120.50	1.00	0.00	2.00	500.00	0.10	10	16.22	3.22	125.46	125.06	125.09
L-C-9	Circular	147+00.00	C-3	C-5	120.00	119.10	1.00	0.00	2.50	500.00	0.18	16	15.83	4.15	122.09	121.46	125.30
L-C-2	Circular	147+00.00	C-4	C-6	120.00	119.40	1.00	0.00	2.50	499.80	0.12	23	16.21	4.59	125.06	124.11	124.50
L-C-10	Circular	152+00.00	C-5	C-7	118.60	118.36	1.00	0.00	3.00	163.00	0.15	25	15.80	4.58	121.46	121.28	124.50
L-C-3	Circular	151+99.80	C-6	C-8	118.90	118.70	1.00	0.00	3.00	163.20	0.12	34	15.84	4.86	124.11	123.71	124.50
L-C-11	Circular	153+63.00	C-7	C-9	117.86	117.46	1.00	0.00	3.50	337.00	0.12	30	15.79	3.97	121.28	121.05	126.50
L-C-4	Circular	153+63.00	C-8	C-10	118.20	117.86	1.00	0.00	3.50	337.00	0.10	41	15.84	4.26	123.71	123.16	126.50
L-C-12	Circular	157+00.00	C-9	C-11	117.46	116.86	1.00	0.00	3.50	500.28	0.12	33	15.80	4.49	121.05	120.55	124.50
L-D-1	Circular	120+03.77	D-1	D-2	122.07	121.87	1.00	0.00	2.50	202.16	0.10	10	15.51	3.12	123.69	123.51	127.40

Table 13.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (10-Year) - Outfalls 1-4

Model: 10YR_SegE_Prop.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-D-6	Circular	107+10.26	D-10	D-12	119.21	118.98	1.00	0.00	4.00	234.61	0.10	42	15.79	4.41	122.06	121.76	128.37
L-D-13	Circular	107+10.00	D-11	MH-43	114.92	114.91	1.00	0.00	5.50	32.14	0.03	22	16.07	1.11	119.54	119.54	128.65
L-D-7	Circular	104+77.79	D-12	D-14	118.98	118.69	1.00	0.00	4.00	295.25	0.10	47	15.80	5.10	121.76	121.20	128.18
L-D-16	Circular	104+79.77	D-13	D-15	114.33	114.24	1.00	0.00	6.00	292.54	0.03	26	16.11	1.06	119.53	119.52	128.25
L-D-8	Circular	101+84.93	D-14	D-15	118.69	118.60	1.00	0.00	4.00	86.00	0.10	55	15.79	6.77	121.20	120.84	127.94
L-D-17	**Circular**	**101+84.93**	**D-15**	**D-17**	**114.24**	**114.19**	**1.00**	**0.00**	**6.00**	**169.57**	**0.03**	**77**	**15.96**	**2.93**	**119.52**	**119.47**	**127.94**
L-D-18	Circular	100+18.70	D-16	D-17	121.57	121.36	1.00	0.00	2.00	92.51	0.23	2	15.76	2.92	122.21	121.91	127.07
L-D-2	Circular	118+01.62	D-2	D-4	121.87	121.50	1.00	0.00	2.50	297.05	0.12	13	15.80	4.00	123.51	122.72	127.20
L-D-9	Circular	118+01.28	D-3	D-5	118.52	118.22	1.00	0.00	4.00	298.36	0.10	5	16.01	1.67	119.77	119.72	125.60
D32-D31	Circular		D32	C-15	116.63	116.28	1.00	0.00	2.50	71.00	0.49	8	16.01	3.97	119.86	119.78	122.43
D33-D35	Rectangular		D33	D35	114.07	113.90	1.00	6.00	5.00	258.00	0.07	159	16.01	5.29	119.37	119.08	122.71
D34-D33	Circular		D34	D33	117.79	116.59	1.00	0.00	2.00	71.00	1.69	7	15.99	6.60	119.33	119.37	123.04
D35-D37	**Rectangular**		**D35**	**D37**	**112.90**	**112.85**	**1.00**	**6.00**	**6.00**	**107.00**	**0.05**	**171**	**16.01**	**4.73**	**119.08**	**118.85**	**123.57**
D36-D35	Circular		D36	D35	118.77	116.92	1.00	0.00	1.50	71.00	2.61	6	15.89	8.68	119.61	119.08	123.57
D38-D36	Circular		D38	D36	120.50	119.50	1.00	0.00	1.50	73.00	1.37	3	15.75	5.75	121.01	120.01	123.50
L-D-3	Circular	115+04.60	D-4	D-6	120.00	119.66	1.00	0.00	4.00	342.19	0.10	20	15.78	2.42	122.50	122.39	127.00
L-D-10	Circular	115+02.93	D-5	D-7	118.22	117.88	1.00	0.00	4.00	340.52	0.10	10	16.03	2.86	119.72	119.56	126.85
L-D-4	Circular	111+62.95	D-6	D-8	119.66	119.46	1.00	0.00	4.00	204.56	0.10	30	15.79	3.22	122.39	122.27	126.64
L-D-11	Circular	111+62.66	D-7	D-9	115.88	115.52	1.00	0.00	5.00	205.63	0.18	16	16.03	1.52	119.56	119.55	126.77
L-D-5	Circular	109+58.73	D-8	D-10	119.46	119.21	1.00	0.00	4.00	250.39	0.10	36	15.79	3.79	122.27	122.06	126.51
L-D-12	Circular	109+58.93	D-9	D-11	115.52	115.42	1.00	0.00	5.00	247.58	0.04	19	16.05	1.22	119.55	119.54	128.88
Link740	Circular	2172+18.71	E-8	A-54	125.17	124.45	1.00	0.00	4.00	477.31	0.15	73	16.23	5.81	133.06	131.73	135.77
L-A-1	Rectangular	2123+38.35	EX-1	A-1	132.84	132.81	1.00	4.00	2.00	61.68	0.05	-26	15.91	1.43	137.13	137.04	138.33
L-A-1	Trapezoidal	2123+38.35	EX-1	A-1	136.86	136.31	1.00	15.00	0.50	61.68	0.89	5	15.92	1.88	137.13	137.04	138.33
L-A-15	Rectangular	2172+28.31	EX-10	A-24	127.94	127.47	1.00	6.00	3.00	490.43	0.10	38	16.07	3.31	131.24	130.97	133.20
L-A-17	Rectangular	2178+54.89	EX-11	A-25	127.33	127.16	1.00	6.00	3.00	188.09	0.09	42	16.07	3.67	130.92	130.85	134.26
L-A-19	Rectangular	2181+59.67	EX-12	A-26	127.06	125.29	1.00	6.00	3.00	163.30	1.08	45	16.07	5.77	130.80	130.73	133.75
L-A-21	Rectangular	2185+38.35	EX-13	EX-14	123.00	122.87	1.00	6.00	3.00	34.87	0.37	49	16.07	2.72	130.56	130.59	132.87
L-A-94	Rectangular	2185+68.27	EX-14	A-28	122.87	122.79	2.00	5.00	5.00	55.03	0.15	191	16.04	3.81	130.59	130.49	132.67
L-A-91	Rectangular	2185+67.08	EX-15	EX-19	123.02	122.89	2.00	5.00	5.00	87.33	0.15	102	16.01	2.04	130.56	130.55	134.40
L-A-26	Circular	2190+64.93	EX-16	EX-18	126.15	125.85	1.00	0.00	2.00	91.05	0.33	8	15.74	4.00	130.75	130.69	135.45
L-A-25	Circular	2195+54.30	EX-17	EX-20	124.69	124.55	1.00	0.00	3.00	91.84	0.15	14	16.01	1.95	130.92	130.88	137.31
L-A-22	Circular	2190+71.12	EX-18	EX-19	123.85	123.15	1.00	0.00	4.00	478.61	0.15	26	16.01	2.04	130.69	130.55	132.58
L-A-92	Rectangular	2185+67.55	EX-19	A-30	122.89	122.88	2.00	5.00	5.00	8.18	0.12	128	16.01	2.55	130.55	130.50	132.87
L-A-3	Rectangular	2124+82.97	EX-2	A-2	132.77	132.66	1.00	4.00	2.00	217.01	0.05	22	15.95	2.78	137.02	136.69	137.67
L-A-24	Circular	2195+55.99	EX-20	A-33	124.55	124.39	1.00	0.00	3.50	105.71	0.15	14	16.01	1.45	130.88	130.85	135.03
L-A-5	Rectangular	2127+85.97	EX-3	EX-4	132.60	132.48	1.00	5.00	2.00	270.90	0.04	31	16.23	3.09	136.67	136.65	137.52
L-A-5	Trapezoidal	2127+85.97	EX-3	EX-4	136.72	136.55	1.00	22.50	0.25	270.90	0.06	0	0.00	0.00	136.65	136.65	137.52
L-A-6	Rectangular	2130+56.87	EX-4	A-3	132.48	132.45	1.00	5.00	2.00	43.11	0.07	60	15.90	5.95	136.65	136.33	137.52
L-A-6	Trapezoidal	2130+56.87	EX-4	A-3	136.55	135.95	1.00	22.50	0.50	43.11	1.39	4	15.91	1.95	136.65	136.33	137.52
L-A-8	Rectangular	2131+85.55	EX-5	A-4	132.38	132.21	1.00	5.00	2.00	215.21	0.08	37	16.24	3.67	136.25	136.13	137.22
L-A-8	Trapezoidal	2131+85.55	EX-5	A-4	136.42	135.95	1.00	38.00	0.50	150.00	0.31	0	0.00	0.00	136.25	136.13	137.22
L-A-10	Rectangular	2134+82.74	EX-6	MH-2	131.11	130.94	1.00	5.00	3.00	173.21	0.10	57	16.18	4.09	136.95	135.95	137.22
L-A-12	Rectangular	2138+29.63	EX-7	EX-8	130.75	130.59	1.00	5.00	3.00	123.37	0.13	63	15.83	4.76	136.14	136.47	137.14
L-A-37	Rectangular	2139+52.95	EX-8	MH-3	130.59	130.20	1.00	5.00	3.00	298.68	0.13	68	15.83	5.13	136.47	135.47	137.14
L-A-13	Rectangular	2166+48.47	EX-9	A-23	128.51	128.18	1.00	6.00	3.00	351.53	0.09	28	16.05	2.94	131.20	131.14	134.00
L-A-33	Circular	2134+82.74	MH-1	EX-6	131.16	131.11	1.00	0.00	3.00	54.14	0.09	24	16.25	3.54	136.90	136.95	137.62
L-A-74	Circular	2146+64.42	MH-10	A-47	128.21	127.88	1.00	0.00	4.00	335.61	0.10	58	15.80	4.62	136.37	136.08	138.00
L-A-74	Trapezoidal	2146+64.42	MH-10	A-47	136.49	135.42	1.00	38.00	0.50	335.61	0.32	0	0.00	0.00	136.37	136.08	138.00
L-A-89	Rectangular	2185+31.55	MH-11	A-60	123.23	123.17	2.00	5.00	5.00	44.00	0.14	92	16.01	1.83	130.58	130.57	133.36
L-A-87	Circular	2189+87.46	MH-12	A-55	124.97	124.20	1.00	0.00	2.00	387.99	0.20	9	18.10	3.23	130.36	130.57	133.68
E100	**Natural**	**2186+00.59**	**MH-13**	**E100-OUT**	**122.77**	**122.07**	**1.00**	**0.00**	**0.00**	**1206.00**	**0.06**	**334**	**16.05**	**2.40**	**130.37**	**129.68**	**146.49**
L-B-4	Circular	2205+75.55	MH-14	B-37	123.18	122.75	1.00	0.00	2.50	224.51	0.19	24	16.77	4.86	128.24	128.26	131.00
L-B-9	Circular	2223+00.00	MH-15	B-41	119.76	119.36	1.00	0.00	4.00	399.21	0.10	57	15.53	4.51	127.54	127.15	129.50
L-B-64	Rectangular	2236+92.92	MH-16	B-34	117.02	116.95	2.00	7.00	5.00	152.81	0.05	233	15.54	3.32	125.48	125.41	126.37
L-B-20	Circular	2213+09.24	MH-17	MH-18	120.80	120.48	1.00	0.00	4.00	223.24	0.14	24	16.28	2.23	127.86	127.82	130.55
L-B-25	Circular	2213+12.52	MH-18	MH-19	119.98	119.69	1.00	0.00	4.50	198.54	0.15	45	15.89	2.82	127.82	127.73	130.00
L-B-27	Circular	2215+13.89	MH-19	MH-20	119.69	119.44	1.00	0.00	4.50	205.31	0.12	50	15.78	3.13	127.73	127.63	131.71
L-A-34	Rectangular	2136+56.22	MH-2	A-5	130.94	130.85	1.00	5.00	3.00	93.59	0.10	59	16.18	4.42	135.95	135.90	137.22
L-A-34	Trapezoidal	2136+56.22	MH-2	A-5	135.80	135.57	1.00	38.00	0.50	93.59	0.25	5	16.01	0.90	135.95	135.90	137.22
L-B-29	Circular	2217+19.58	MH-20	MH-21	119.44	118.96	1.00	0.00	4.50	384.54	0.12	56	16.23	3.51	127.63	127.33	128.36

Table 13.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (10-Year) - Outfalls 1-4

Model: 10YR_SegE_Prop.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L-B-30	Circular	2221+29.13	MH-21	MH-22	118.96	118.34	1.00	0.00	4.50	542.05	0.11	56	16.22	3.51	127.33	126.91	133.76
L-B-32	Circular	2226+58.23	MH-22	MH-23	118.34	117.73	1.00	0.00	4.50	509.68	0.12	72	16.11	4.49	126.91	126.25	133.38
L-B-33	Circular	2231+81.08	MH-23	MH-24	117.73	117.02	1.00	0.00	4.50	605.28	0.12	72	16.13	4.49	126.25	125.52	128.70
L-B-35	Circular	2237+86.60	MH-24	B-31	117.02	116.95	1.00	0.00	4.50	71.00	0.10	84	16.12	5.26	125.52	125.39	129.65
L-B-42	Circular	2226+56.48	MH-25	B-22	119.94	119.56	1.00	0.00	3.00	260.29	0.15	12	15.61	1.69	125.45	125.43	126.85
L-B-49	Circular	2235+77.80	MH-26	B-28	117.76	117.62	1.00	0.00	4.00	137.32	0.10	25	15.62	2.00	125.37	125.35	126.96
L-B-51	Circular	2237+93.19	MH-27	MH-28	117.40	117.27	1.00	0.00	4.00	81.35	0.16	27	15.77	2.12	125.33	125.36	130.21
L-B-61	Rectangular	2238+74.53	MH-28	MH-29	116.88	116.85	2.00	7.00	5.00	43.45	0.07	333	16.00	4.74	125.36	125.36	130.45
L-B-60	Rectangular	2238+91.32	MH-29	MH-32	116.85	116.84	2.00	7.00	5.00	10.62	0.09	361	16.02	5.14	125.36	125.22	130.09
L-A-38	Rectangular	2142+51.63	MH-3	A-13	130.20	130.05	1.00	6.00	3.00	148.36	0.10	78	15.96	4.67	135.47	135.34	137.14
L-A-38	Trapezoidal	2142+51.63	MH-3	A-13	135.36	134.92	1.00	38.00	0.50	148.36	0.30	3	15.96	0.91	135.47	135.34	137.14
L-B-58	Circular	2242+89.73	MH-30	MH-31	118.80	117.88	1.00	0.00	3.50	367.27	0.25	18	16.00	1.91	125.48	125.42	130.85
L-B-59	Circular	2239+20.45	MH-31	B-31	117.88	117.82	1.00	0.00	3.50	64.08	0.09	19	15.99	1.92	125.42	125.39	129.83
E131	**Natural**	**2238+94.89**	**MH-32**	**E131-OUT**	**116.84**	**117.85**	**1.00**	**0.00**	**0.00**	**475.00**	**-0.21**	**355**	**16.04**	**1.37**	**125.22**	**125.13**	**131.92**
L-B-65	Circular	122+51.64	MH-33	B-65	120.62	120.51	1.00	0.00	2.00	162.07	0.07	10	17.12	3.09	127.75	127.34	128.00
L-B-67	Circular	123+98.05	MH-34	B-64	120.34	120.25	1.00	0.00	2.50	91.77	0.10	22	17.08	4.54	127.75	126.61	127.90
L-B-69	Circular	126+07.40	MH-35	B-63	119.58	119.37	1.00	0.00	3.50	212.15	0.10	36	17.04	3.74	126.57	126.54	125.80
L-B-71	Circular	129+15.80	MH-36	B-62	119.28	119.24	1.00	0.00	3.50	44.83	0.09	69	17.09	6.82	126.51	126.49	125.50
L-B-77	Circular	135+26.15	MH-37	MH-38	118.68	118.60	1.00	0.00	4.50	89.68	0.09	74	16.95	4.62	126.34	126.36	127.20
L-B-78	Circular	2253+23.59	MH-38	B-57	118.60	118.55	1.00	0.00	4.50	54.83	0.09	74	17.08	4.62	126.36	126.27	127.00
L-B-80	Circular	2251+42.33	MH-39	MH-40	118.43	118.28	1.00	0.00	4.50	158.15	0.09	75	16.81	4.72	126.22	126.17	127.00
L-A-41	Rectangular	2145+51.15	MH-4	MH-5	129.86	129.47	1.00	6.00	3.00	300.00	0.13	91	15.89	5.42	135.60	135.80	136.79
L-B-82	Circular	2249+83.35	MH-40	B-56	118.28	118.19	1.00	0.00	4.50	95.34	0.09	76	16.81	4.76	126.17	126.13	127.50
L-B-86	Rectangular	2238+89.55	MH-41	B-47	117.21	117.12	1.00	5.00	5.00	89.64	0.10	111	15.55	4.45	125.63	125.55	127.06
L-B-89	Rectangular	2241+11.95	MH-42	MH-41	117.43	117.21	1.00	5.00	5.00	222.23	0.10	109	16.56	4.37	125.76	125.63	127.75
L-D-14	Circular	106+77.66	MH-43	MH-44	111.73	111.73	1.00	0.00	4.50	45.65	0.00	22	16.07	1.39	119.54	119.53	128.63
L-D-15	Circular	106+31.71	MH-44	D-13	114.89	114.83	1.00	0.00	5.50	150.88	0.04	23	16.11	1.13	119.53	119.53	128.54
L-A-44	Rectangular	2148+51.15	MH-5	A-17	129.47	128.67	1.00	6.00	3.00	448.74	0.18	100	15.94	5.88	135.80	134.69	136.79
L-A-53	Circular	2200+59.37	MH-6	A-34	124.56	124.23	1.00	0.00	2.50	259.13	0.13	20	17.08	4.05	130.76	130.80	131.79
L-A-55	Circular	2195+35.93	MH-7	A-31	123.97	123.74	1.00	0.00	3.50	235.72	0.10	29	15.70	3.47	130.85	130.82	131.50
L-A-57	Circular	2189+99.92	MH-8	A-29	123.44	123.14	1.00	0.00	4.00	299.67	0.10	36	15.70	3.61	130.61	130.47	131.99
L-A-68	Circular	2135+40.00	MH-9	A-45	130.79	129.96	1.00	0.00	3.00	559.96	0.15	26	15.76	4.10	138.67	137.39	139.66
Link445	Circular		Node458	MH-33	0.05	0.00	1.00	0.00	0.05	10.00	0.50	4	15.48	8.57	126.09	127.75	128.91
Link445	Circular		Node458	MH-33	0.05	0.00	1.00	0.00	0.05	10.00	0.50	4	15.48	8.57	126.09	127.75	128.91

Table 14.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (10-Year) - Outfalls 5-6

Model: US290_Prop_SegD_SysA.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 5																	
L_A-1	Circular	133+98.14	A-1	MH-A1	120.76	120.56	1.00	0.00	2.00	136.03	0.15	-18	15.69	2.76	126.77	126.63	126.50
L_A-10	Rectangular	2276+83.33	A-10	A-12	116.30	115.98	1.00	5.00	3.00	216.70	0.15	86	15.71	5.72	124.03	123.92	123.86
L_A-10	Trapezoidal	2276+83.33	A-10	A-12	123.36	122.61	1.00	38.00	0.50	216.70	0.35	28	16.05	1.64	124.03	123.92	123.86
L_A-11	Rectangular	2278+74.79	A-11	A-13	116.44	115.65	1.00	5.00	3.00	524.58	0.15	82	15.74	5.43	123.46	122.62	124.44
L_A-11	Trapezoidal	2278+74.79	A-11	A-13	123.44	123.40	1.00	38.00	0.50	524.58	0.01	0	15.72	0.04	123.46	123.40	124.44
L_A-12	Rectangular	2279+00.00	A-12	MH-A3	115.98	115.50	1.00	5.00	3.00	319.11	0.15	94	15.71	6.96	123.92	123.37	123.11
L_A-13	Rectangular	2284+00.00	A-13	MH-A4	115.65	115.25	1.00	6.00	3.00	266.91	0.15	105	15.74	7.30	122.62	122.18	124.44
L_A-14	Circular	2289+00.00	A-14	MH-A5	116.12	115.55	1.00	0.00	2.50	379.56	0.15	38	16.77	7.62	122.93	122.87	123.68
L_A-15	Rectangular	2288+00.00	A-15	MH-A4	113.76	113.57	1.00	5.00	3.00	128.88	0.15	78	16.75	7.40	122.19	122.18	124.44
L_A-16	Circular	2292+50.00	A-16	A-14	117.14	116.62	1.00	0.00	2.00	349.97	0.15	24	16.80	7.44	123.05	122.93	122.34
L_A-16	Trapezoidal	2292+50.00	A-16	A-14	121.84	123.18	1.00	38.00	0.50	349.97	-0.38	0	0.00	0.00	123.05	122.93	122.34
L_A-17	Rectangular	2292+00.00	A-17	A-15	114.36	113.76	1.00	5.00	3.00	399.59	0.15	75	16.75	4.94	122.23	122.20	123.39
L_A-17	Trapezoidal	2292+00.00	A-17	A-15	122.89	123.94	1.00	38.00	0.50	399.59	-0.26	0	0.00	0.00	122.23	122.23	123.39
L_A-18	Rectangular	2296+49.68	A-18	A-17	115.04	114.36	1.00	4.00	3.00	449.68	0.15	66	16.75	5.45	122.30	122.23	121.81
L_A-18	Trapezoidal	2296+49.68	A-18	A-17	121.31	122.89	1.00	38.00	0.50	449.68	-0.35	0	0.00	0.00	122.30	122.23	121.81
L_A-19	Circular	2298+99.64	A-19	A-18	115.41	115.04	1.00	0.00	3.00	249.96	0.15	50	16.81	7.04	122.31	122.30	120.94
L_A-19	Trapezoidal	2298+99.64	A-19	A-18	120.44	121.31	1.00	38.00	0.50	249.96	-0.35	17	16.74	1.22	122.31	122.30	120.94
L_A-2	Circular	2256+01.79	A-2	A-4	119.43	118.83	1.00	0.00	3.00	403.17	0.15	-23	15.68	3.06	126.70	126.18	126.46
L_A-21	Rectangular	131+82.58	A-21	MH-A10	113.33	113.23	1.00	5.00	5.00	100.00	0.10	111	16.00	9.87	123.09	123.01	125.50
L_A-22	Circular	132+80.91	A-22	MH-A10	114.33	114.23	1.00	0.00	4.00	100.00	0.10	50	0.00	3.36	123.07	123.01	125.50
L_A-23	Rectangular	122+26.28	A-23	MH-A7	122.60	122.16	1.00	8.00	4.00	262.00	0.17	25	19.41	1.45	125.02	125.04	129.80
L_A-24	Rectangular	121+93.38	A-24	MH-A8	122.59	122.17	1.00	8.00	4.00	322.00	0.13	22	16.52	1.59	124.90	124.87	128.50
L_A-24A	Trapezoidal	2205+87.24	A-24A	A-24	127.66	122.59	1.00	2.00	4.00	3453.00	0.15	12	16.51	1.30	129.04	124.90	132.00
L_A-24B	Trapezoidal	2156+18.61	A-24B	A-24A	132.98	127.66	1.00	2.00	2.00	5321.09	0.10	5	16.14	0.80	134.04	129.04	137.14
L_A-3	Circular	2260+00.00	A-3	A-5	119.75	119.00	1.00	0.00	2.50	500.14	0.15	-16	15.71	2.97	125.21	124.68	125.58
L_A-3	Trapezoidal	2260+00.00	A-3	A-5	125.08	124.59	1.00	38.00	0.50	500.14	0.10	2	15.75	0.68	125.21	124.68	125.58
L_A-4	Rectangular	2260+00.00	A-4	A-6	118.83	118.04	1.00	4.00	3.00	525.73	0.15	53	15.76	4.36	126.18	125.65	125.41
L_A-5	Circular	2265+00.00	A-5	A-7	118.50	117.90	1.00	0.00	3.00	399.69	0.15	37	15.71	6.73	124.68	124.22	125.09
L_A-5	Trapezoidal	2265+00.00	A-5	A-7	124.59	123.99	1.00	38.00	0.50	399.69	0.15	2	15.71	0.64	124.68	124.22	125.09
L_A-6	Rectangular	2265+25.73	A-6	A-8	118.04	117.33	1.00	4.00	3.00	474.27	0.15	68	15.69	6.99	125.65	124.86	126.05
L_A-6	Trapezoidal	2265+25.73	A-6	A-8	125.55	123.66	1.00	38.00	0.50	474.27	0.40	3	15.68	1.12	125.65	124.86	126.05
L_A-7	Rectangular	2268+99.69	A-7	A-9	117.90	117.00	1.00	4.00	3.00	600.31	0.15	60	15.71	5.02	124.22	123.56	124.49
L_A-8	Rectangular	2270+00.00	A-8	A-10	117.33	116.30	1.00	5.00	3.00	683.35	0.15	79	15.70	5.22	124.86	124.03	124.16
L_A-9	Rectangular	2275+00.00	A-9	A-11	117.00	116.44	1.00	5.00	3.00	374.79	0.15	83	15.73	5.48	123.56	123.46	124.50
L_A-9	Trapezoidal	2275+00.00	A-9	A-11	123.50	123.44	1.00	38.00	0.50	374.79	0.02	0	15.71	0.15	123.56	123.46	124.50
L_BF-63	Circular	122+33.90	BF-63	MH-A6	123.30	123.00	3.00	0.00	3.00	90.25	0.33	21	23.92	1.72	125.18	125.16	129.70
L_E112-OUT	**Trapezoidal**		**E112-00**	**E112-OUT**	**110.46**	**110.28**	**1.00**	**10.00**	**9.00**	**150.00**	**0.12**	**453**	**16.13**	**2.90**	**116.20**	**116.02**	**120.00**
L_E112-01	Rectangular		E112-01	E112-00	112.30	110.46	1.00	10.00	5.00	1536.00	0.12	453	16.15	9.04	121.77	116.20	123.00
L_MH-A1	Circular	135+34.00	MH-A1	A-2	120.56	120.43	1.00	0.00	2.00	82.25	0.15	-34	15.69	4.60	126.63	126.70	126.50
L_MH-A10	Rectangular	132+41.85	MH-A10	MH-A9	113.23	112.95	1.00	9.00	5.00	230.25	0.12	153	16.00	5.29	123.01	122.93	125.50
L_MH-A3	Rectangular	2282+19.11	MH-A3	MH-A5	113.50	113.05	1.00	7.00	5.00	301.78	0.15	241	16.44	6.85	123.37	122.87	124.00
L_MH-A4	Rectangular	2285+97.62	MH-A4	E112-01	112.42	112.30	1.00	9.00	5.00	101.43	0.12	453	16.10	13.40	122.18	121.77	123.94
L_MH-A5	Rectangular	2285+20.66	MH-A5	MH-A4	112.78	112.42	1.00	9.00	5.00	294.40	0.12	364	16.13	8.06	122.87	122.18	125.13
L_MH-A6	Trapezoidal	121+63.75	MH-A6	A-23	123.00	122.60	1.00	2.00	4.00	217.00	0.18	25	19.18	1.91	125.16	125.02	129.31
L_MH-A6A	Trapezoidal	2206+27.66	MH-A6A	MH-A6	128.69	123.00	1.00	2.00	3.00	3195.00	0.18	23	16.67	1.69	130.46	125.16	132.50
L_MH-A6B	Trapezoidal	2156+34.38	MH-A6B	MH-A6A	134.00	128.69	1.00	2.00	2.00	5306.00	0.10	12	16.28	1.10	135.52	130.46	137.00
L_MH-A7	Trapezoidal	123+64.14	MH-A7	MH-A7A	122.16	121.99	1.00	2.00	4.00	173.00	0.10	25	19.56	1.28	125.04	125.00	129.40
L_MH-A7A	Rectangular		MH-A7A	MH-A7B	121.99	121.90	1.00	3.00	2.00	95.00	0.09	25	19.61	4.22	125.00	124.47	128.50
L_MH-A7B	Trapezoidal		MH-A7B	MH-A3	121.90	119.76	1.00	2.00	4.00	2762.85	0.08	25	20.29	1.56	124.47	123.37	128.50
L_MH-A8	Trapezoidal	123+06.59	MH-A8	MH-A9	122.17	121.70	1.00	2.00	4.00	3213.97	0.01	19	17.12	1.14	124.87	122.93	128.50
L_MH-A9	Rectangular	134+52.75	MH-A9	MH-A5	112.95	112.78	1.00	9.00	5.00	146.73	0.12	164	16.03	12.29	122.93	122.87	125.70

Table 14.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (10-Year) - Outfalls 5-6

Model: US290_Prop_SegD_SysA.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 6																	
L-A-2A	Trapezoidal		A-1A	A-2A	118.66	118.30	1.00	2.00	3.00	100.00	0.36	2	15.52	1.11	119.20	118.86	125.00
L-A-1A	Trapezoidal		A-1AA	A-1A	119.50	118.66	1.00	2.00	3.00	590.00	0.14	0	0.00	0.00	119.50	119.20	125.00
L-A-5A	Trapezoidal		A-2A	A-5A	118.30	116.90	1.00	2.00	3.00	452.00	0.31	2	15.58	0.92	118.86	118.13	125.00
L-A-8A	Trapezoidal		A-5A	A-8A	116.90	116.70	1.00	2.00	3.00	597.00	0.03	5	15.81	0.87	118.13	117.88	125.00
L-B-10A	Trapezoidal		A-8A	B-10A	116.70	115.70	1.00	2.00	3.00	805.00	0.12	6	16.30	0.60	117.88	117.84	125.00
L_AN-0	Circular	2365+49.72	AN-0	B-31	108.15	107.40	1.00	0.00	3.00	749.82	0.10	16	15.88	2.93	112.50	112.40	114.15
L_AS-0	Circular	2361+45.00	AS-0	B-32	108.45	107.68	1.00	0.00	3.00	515.00	0.15	26	15.78	3.70	113.65	113.05	114.46
L_AS-1	Circular	2366+52.45	AS-1	AS-0	110.21	109.45	1.00	0.00	2.00	505.00	0.15	9	15.78	3.17	114.40	113.65	115.68
L_B-1	Circular	2304+72.37	B-1	B-3	110.50	110.08	1.00	0.00	3.00	427.21	0.10	19	0.00	5.84	116.78	116.43	118.15
L_B-10	Rectangular	2315+50.00	B-10	B-12	112.30	111.70	1.00	4.00	3.00	400.18	0.15	46	15.74	4.33	118.83	118.37	119.57
L_B-10-OF	Trapezoidal	2315+50.00	B-10	A-8A	119.07	116.70	1.00	50.00	0.50	15.00	15.80	0	0.00	0.00	118.83	117.88	119.57
L-B-11A	Trapezoidal		B-10A	B-11A	115.70	115.62	1.00	2.00	3.00	698.00	0.01	17	16.19	1.24	117.84	117.07	125.00
L_B-11	Rectangular	2324+00.00	B-11	B-13	107.58	107.38	1.00	5.00	4.00	199.62	0.10	61	15.89	3.75	114.84	114.73	117.00
L_B-11	Trapezoidal	2324+00.00	B-11	B-13	116.50	115.90	1.00	38.00	0.50	199.62	0.30	0	0.00	0.00	114.73	114.73	117.00
L-B-13A	Trapezoidal		B-11A	B-13A	115.62	114.70	1.00	2.00	3.00	301.00	0.31	17	16.22	1.58	117.07	116.46	125.00
L_B-12	Rectangular	2319+50.00	B-12	B-14	111.70	111.18	1.00	4.00	3.00	350.21	0.15	45	15.73	4.20	118.37	118.09	118.87
L_B-12-OF	Trapezoidal	2319+50.00	B-12	B-10A	118.37	115.70	1.00	50.00	0.50	15.00	17.80	26	16.04	2.25	118.37	117.84	118.87
L_B-13	Rectangular	2325+99.62	B-13	B-15	107.38	106.88	1.00	5.00	4.00	500.14	0.10	76	15.88	3.79	114.73	114.21	116.40
L-B-14A	Trapezoidal		B-13A	B-14A	114.70	114.34	1.00	2.00	3.00	301.00	0.12	15	16.27	1.18	116.46	116.21	125.00
L_B-14	Rectangular	2323+00.00	B-14	B-16	111.18	110.58	1.00	4.00	3.00	399.87	0.15	45	16.30	3.88	118.09	117.70	118.08
L-B-16A	Trapezoidal		B-14A	B-16A	114.34	113.93	1.00	2.00	3.00	520.00	0.08	16	16.35	1.15	116.21	115.77	125.00
L_B-15	Rectangular	2330+99.62	B-15	B-17	106.88	106.68	1.00	5.00	4.00	200.00	0.10	86	15.89	8.12	114.21	113.86	115.26
L_B-16	Rectangular	2327+00.00	B-16	B-18	110.58	110.13	1.00	4.00	3.00	300.01	0.15	56	15.89	4.68	117.70	117.19	118.53
L_B-16-OF	Trapezoidal	2327+00.00	B-16	B-11A	118.03	115.62	1.00	50.00	0.50	15.00	16.07	0	0.00	0.00	117.70	117.07	118.53
L-B-18A	Trapezoidal		B-16A	B-18A	113.93	113.12	1.00	2.00	3.00	653.00	0.12	17	16.47	1.58	115.77	114.29	125.00
L_B-17	Rectangular	2332+99.62	B-17	B-19	106.68	106.33	1.00	6.00	4.00	350.58	0.10	90	15.89	3.93	113.86	113.44	115.26
L_B-18	Rectangular	2330+00.00	B-18	B-20	110.13	109.63	1.00	4.00	3.00	330.00	0.15	63	15.75	5.28	117.19	116.47	118.23
L_B-18-OF	Trapezoidal	2330+00.00	B-18	B-13A	117.73	114.70	1.00	50.00	0.50	15.00	20.20	0	0.00	0.00	117.19	116.46	118.23
L-E13504	Trapezoidal		B-18A	E135-04	113.12	108.90	1.00	2.00	3.00	440.00	0.96	18	16.51	2.54	114.29	112.51	125.00
L_B-19	Rectangular	2336+50.00	B-19	B-21	106.33	106.18	1.00	6.00	4.00	149.62	0.10	92	15.88	3.86	113.44	113.29	115.09
L_B-19	Trapezoidal	2336+50.00	B-19	B-21	114.59	113.55	1.00	38.00	0.50	149.62	0.70	0	0.00	0.00	113.29	113.29	115.09
L_B-2-OF	Trapezoidal	2302+00.00	B-2	A-1A	122.17	118.66	1.00	50.00	0.50	15.00	23.40	0	0.00	0.00	119.98	119.20	122.67
L_B-2	Circular	2302+00.00	B-2	B-4	114.83	114.23	1.00	0.00	2.50	400.00	0.15	16	15.80	4.96	119.98	119.78	122.67
L_B-2	Trapezoidal	2302+00.00	B-2	B-4	121.67	120.27	1.00	38.00	0.50	400.00	0.35	0	0.00	0.00	119.78	119.78	122.67
L_B-20	Rectangular	2333+30.00	B-20	B-22	109.63	109.30	1.00	4.00	3.00	220.00	0.15	68	15.75	5.66	116.47	115.95	117.78
L_B-20-OF	Trapezoidal	2333+30.00	B-20	B-14A	117.28	114.34	1.00	50.00	0.50	15.00	19.60	0	0.00	0.00	116.47	116.21	117.78
L_B-21	Rectangular	2337+99.62	B-21	B-23	106.18	105.58	1.00	6.00	4.00	600.12	0.10	112	15.88	8.05	113.29	112.40	114.05
L_B-22	Rectangular	2335+50.00	B-22	B-24	109.30	108.85	1.00	4.00	3.00	300.00	0.15	64	15.77	7.27	115.95	115.18	116.57
L_B-23	Rectangular	2343+99.62	B-23	B-25	105.58	105.28	1.00	7.00	4.00	299.33	0.10	126	15.88	4.82	112.40	112.39	112.90
L_B-24	Rectangular	2338+50.00	B-24	B-26	108.85	108.40	1.00	5.00	3.00	300.00	0.15	81	16.01	5.34	115.18	114.48	116.35
L_B-25	Rectangular	2346+98.97	B-25	MH-B1	105.28	105.00	1.00	7.00	4.00	276.78	0.10	137	15.88	7.79	112.39	112.39	113.27
L_B-26	Rectangular	2341+50.00	B-26	B-27	108.40	107.91	1.00	5.00	3.00	330.00	0.15	87	16.00	5.79	114.48	113.60	116.12
L_B-27	Rectangular	2344+80.00	B-27	B-28	107.91	107.47	1.00	5.00	3.00	290.00	0.15	94	16.00	6.26	113.60	112.77	115.49
L_B-28	Rectangular	2347+70.00	B-28	MH-B2	107.47	107.18	1.00	5.00	3.00	195.94	0.15	102	16.00	7.24	112.77	112.50	114.94
L_B-29	Rectangular	2352+45.87	B-29	MH-B1	105.85	105.58	1.00	4.00	4.00	270.06	0.10	46	15.91	6.46	112.39	112.39	113.43
L_B-3	Circular	2308+99.63	B-3	B-5	109.58	109.28	1.00	0.00	3.50	299.97	0.10	30	0.00	6.49	116.43	116.00	116.99
L_B-30	Circular	2351+56.35	B-30	MH-B2	106.47	106.18	1.00	0.00	3.50	190.41	0.15	47	15.78	5.15	112.51	112.50	114.87
L_B-31	Circular	2357+99.73	B-31	B-29	106.40	105.85	1.00	0.00	4.00	553.81	0.10	29	15.91	2.78	112.40	112.39	113.70
L_B-32	Circular	2356+30.00	B-32	B-30	107.68	106.97	1.00	0.00	3.00	473.65	0.15	34	15.78	4.74	113.05	112.51	116.22
L_B-33	Rectangular	158+51.77	B-33	MH-B3	108.96	108.65	1.00	5.00	5.00	310.01	0.10	135	16.26	9.98	113.72	113.31	119.00
L_B-34	Rectangular	160+53.02	B-34	MH-B3	109.60	109.40	1.00	5.00	4.00	197.72	0.10	104	16.02	7.54	113.49	113.31	118.07
L_B-4-OF	Trapezoidal	2306+00.00	B-4	A-5A	121.27	116.90	1.00	50.00	0.50	15.00	29.13	0	0.00	0.00	119.78	118.13	121.77
L_B-4	Circular	2306+00.00	B-4	B-6	113.73	113.35	1.00	0.00	3.00	250.00	0.15	20	15.76	3.05	119.78	119.64	121.77
L_B-4	Trapezoidal	2306+00.00	B-4	B-6	120.27	119.40	1.00	38.00	0.50	250.00	0.35	0	0.00	0.00	119.78	119.64	121.77
L_B-5	Circular	2311+99.62	B-5	B-7	108.78	108.38	1.00	0.00	4.00	400.00	0.10	41	0.00	33.64	116.01	115.80	116.62
L_B-6	Circular	2308+50.00	B-6	B-8	113.35	112.83	1.00	0.00	3.00	349.98	0.15	29	15.76	6.58	119.64	119.23	120.40
L_B-6-OF	Trapezoidal	2308+50.00	B-6	A-5A	119.90	116.90	1.00	50.00	0.50	15.00	20.00	0	0.00	0.00	119.64	118.13	120.40
L_B-7	Rectangular	2315+99.62	B-7	B-9	108.38	108.00	1.00	4.00	4.00	380.00	0.10	55	15.89	3.68	115.79	115.39	116.38
L_B-8	Rectangular	2312+00.00	B-8	B-10	112.83	112.30	1.00	3.00	3.00	349.90	0.15	35	15.75	6.51	119.23	118.83	120.12

Table 14.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (10-Year) - Outfalls 5-6

Model: US290_Prop_SegD_SysA.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_B-8-OF	Trapezoidal	2312+00.00	B-8	A-8A	119.62	116.70	1.00	50.00	0.50	15.00	19.47	0	0.00	0.00	119.23	117.88	120.12
L_B-9	Rectangular	2319+79.62	B-9	B-11	108.00	107.58	1.00	4.00	4.00	420.55	0.10	58	15.89	3.83	115.39	114.84	116.40
L-E13504.1	Trapezoidal		D-2A	E135-04	113.05	108.59	1.00	2.00	3.00	160.00	2.79	3	15.52	2.52	113.43	112.51	125.00
L-D-2A	Trapezoidal		D-3A	D-2A	113.22	113.05	1.00	2.00	3.00	200.00	0.09	1	15.54	0.63	113.65	113.43	125.00
L-D-3A	Trapezoidal		D-4A	D-3A	113.70	113.22	1.00	2.00	3.00	145.00	0.33	1	15.51	0.66	113.97	113.65	125.00
E135.2	Natural		E135-03	MH-B1	104.48	104.14	1.00	0.00	0.00	61.00	0.56	701	17.02	3.68	112.40	112.39	116.70
E135.4A	Natural		E135-04	MH-B2	105.50	105.42	1.00	0.00	0.00	20.00	0.40	678	17.96	3.63	112.51	112.50	119.00
E135.4	Natural		E135-05	E135-04	105.79	105.50	1.00	0.00	0.00	74.00	0.39	672	17.97	3.64	112.55	112.51	119.00
E135.6	Natural		E135-06	MH-B3	106.38	106.24	1.00	0.00	0.00	87.00	0.17	581	18.26	2.58	113.33	113.31	118.00
E135.7	Natural		E135-07	E135-06	106.72	106.38	1.00	0.00	0.00	198.00	0.17	580	18.25	2.63	113.39	113.33	118.00
E135.8	Natural		E135-08	E135-07	106.80	106.72	1.00	0.00	0.00	50.00	0.17	627	17.01	2.60	113.42	113.39	118.00
E535.2	Circular		E535-02	E135-07	107.00	106.72	1.00	0.00	2.00	103.00	0.28	-21	16.15	4.06	113.17	113.39	118.00
E535.2	Circular		E535-02	E135-07	0.05	0.00	1.00	0.00	0.05	10.00	0.50	-135	16.98	0.00	###########	###########	118.00
E535.2	Circular		E535-02	E135-07	0.05	0.00	1.00	0.00	0.05	10.00	0.50	-135	16.98	0.00	###########	###########	118.00
E135.1	**Natural**	**2349+75.74**	**MH-B1**	**E135-01**	**104.14**	**103.73**	**1.00**	**0.00**	**0.00**	**87.60**	**0.47**	**728**	**16.81**	**4.27**	**112.39**	**112.37**	**118.83**
E135.3	Natural	2349+65.94	MH-B2	E135-03	105.42	104.48	1.00	0.00	10.83	235.00	0.40	700	17.02	3.60	112.50	112.40	117.61
E135.5	Rectangular	159+70.70	MH-B3	E135-05	106.24	105.79	2.00	8.00	8.00	270.00	0.17	672	17.97	6.41	113.31	112.55	118.07
L_ML-01	Rectangular		ML-01	B-34	110.04	109.60	1.00	4.00	4.00	444.22	0.10	80	16.49	5.28	114.17	113.49	117.27

Table 15.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (10-Year) - Outfalls 7-8

Model:E127PROP_10.XP & BW8PROP_10.XP **11/4/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 7																	
Link590	**Natural**		**6863.30**	**6325.00**	**98.45**	**97.83**	**1**	**0.00**	**0.00**	**538.30**	**0.12**	**676.01**	**16.79**	**3.33**	**106.15**	**105.27**	**112.53**
Link588	Natural		7185.00	7185(ml)	98.45	98.45	1	0.00	0.00	70.00	0.00	584.07	17.03	1.74	106.28	106.25	112.53
Link655	Natural		7216.80	7185.00	99.44	98.45	1	0.00	0.00	31.80	3.11	560.61	16.98	5.46	106.33	106.28	112.53
Link587	Natural		7253.30	7216.80	99.47	99.44	1	0.00	0.00	36.50	0.08	560.38	16.98	5.75	106.58	106.33	112.56
Link665	Natural		7185(ml)	6863.30	98.45	98.45	1	0.00	0.00	251.70	0.00	603.93	16.91	1.79	106.25	106.15	112.53
L_AN4	Circular	2370+99.66	AN-1	AN-2	103.88	103.18	1	0.00	3.50	696.00	0.10	33.20	16.01	3.42	113.18	112.05	113.00
L_AN5	Rectangular	2377+99.72	AN-2	AN-J3	103.18	102.93	1	4.00	4.00	250.28	0.10	65.89	16.01	4.10	112.05	111.89	111.94
L_AN7	Rectangular	2382+99.82	AN-3	AN-J4	102.68	102.38	1	5.00	4.00	300.16	0.10	99.69	16.01	4.96	111.60	111.09	111.64
L_AN9	Rectangular	2388+99.84	AN-4	AN-5	102.08	101.68	1	5.00	4.00	399.57	0.10	127.16	16.01	6.33	110.42	108.91	111.04
L_AN10	Rectangular	2392+99.41	AN-5	AN-J5	101.68	101.43	1	6.00	4.00	250.60	0.10	139.18	16.01	5.78	108.92	108.46	110.36
L_AN12	Rectangular	2398+00.00	AN-6	AN-J6	101.18	100.83	1	6.00	4.00	350.00	0.10	153.22	16.01	6.36	107.90	107.13	109.38
L_AN15	Rectangular	2406+60.52	AN-7	6863.30	100.32	100.00	1	6.00	5.00	318.92	0.10	182.78	15.81	8.12	106.18	106.15	108.55
L_AN6	Rectangular	2380+50.00	AN-J3	AN-3	102.93	102.68	1	4.00	4.00	249.82	0.10	67.77	15.81	4.21	111.89	111.60	112.39
L_AN8	Rectangular	2386+00.00	AN-J4	AN-4	102.38	102.08	1	5.00	4.00	299.84	0.10	99.80	16.01	4.97	111.09	110.42	111.94
L_AN11	Rectangular	2395+62.68	AN-J5	AN-6	101.43	101.18	1	6.00	4.00	251.30	0.10	139.20	16.01	5.78	108.46	107.90	110.36
L_AN13	Rectangular	2401+50.00	AN-J6	AN-J7	100.83	100.55	1	6.00	4.00	274.89	0.10	153.24	16.01	6.37	107.13	106.32	109.96
L_AN14	Rectangular	2404+25.00	AN-J7	AN-7	100.55	100.32	1	6.00	4.00	235.39	0.10	153.24	16.01	6.37	106.32	106.18	109.18
L-RD-1	Trapezoidal		A-R1	RD-2	105.44	104.30	1	2.00	4.00	1144.00	0.10	7.67	15.62	1.08	106.68	106.35	109.50
L_AS5	Circular	2371+00.00	AS-2	AS-J3	103.81	103.41	1	0.00	2.50	400.00	0.10	33.02	0.00	3.19	113.69	113.24	114.63
L_AS7	Circular	2379+00.00	AS-3	AS-J4	103.01	102.66	1	0.00	3.50	350.00	0.10	42.27	0.00	3.61	112.68	112.15	113.53
L_AS9	Circular	2386+00.00	AS-4	AS-J5	102.31	102.01	1	0.00	4.00	305.00	0.10	52.80	15.77	4.17	111.54	110.94	112.73
L_AS11	Circular	2392+10.00	AS-5	AS-J6	101.70	101.48	1	0.00	4.00	220.00	0.10	67.31	15.77	5.32	110.68	110.26	111.97
L_AS13	Circular	2396+50.00	AS-6	AS-J7	101.26	100.94	1	0.00	4.00	325.00	0.10	79.08	15.78	6.26	109.83	109.11	111.65
L_AS15	Circular	2403+00.00	AS-7	AS-8	100.61	100.23	1	0.00	4.00	380.00	0.10	94.92	15.78	8.33	108.57	106.76	110.00
L_AS16	Rectangular	2406+80.00	AS-8	7185(ml)	100.23	100.00	1	4.00	4.00	230.51	0.10	105.00	15.78	7.54	106.76	106.25	110.00
L_AS6	Circular	2375+00.00	AS-J3	AS-3	103.41	103.01	1	0.00	2.50	400.00	0.10	33.02	0.00	3.48	113.24	112.68	115.13
L_AS8	Circular	2382+50.00	AS-J4	AS-4	102.66	102.31	1	0.00	3.50	350.00	0.10	42.27	0.00	3.69	112.15	111.54	113.78
L_AS10	Circular	2389+05.00	AS-J5	AS-5	102.01	101.70	1	0.00	4.00	305.00	0.10	52.77	15.77	4.17	110.94	110.68	113.01
L_AS12	Circular	2394+30.00	AS-J6	AS-6	101.48	101.26	1	0.00	4.00	220.00	0.10	67.42	15.78	5.33	110.26	109.83	112.75
L_AS14	Circular	2399+75.00	AS-J7	AS-7	100.94	100.61	1	0.00	4.00	325.00	0.10	79.35	15.78	6.29	109.11	108.57	111.62
L_BN14	Rectangular	2413+41.07	BN-1	6863.30	99.36	99.00	1	4.00	4.00	361.52	0.10	82.77	16.00	6.81	106.33	106.15	107.82
L_BN2	Circular	2419+50.35	BN-2	BN-J1	99.97	99.64	1	0.00	4.00	335.35	0.10	54.11	16.00	4.29	106.95	106.55	107.52
L_BN4	Circular	2424+00.34	BN-3	BN-J2	100.87	100.20	1	0.00	3.00	225.33	0.30	23.87	16.42	3.89	107.47	107.19	106.17
L_BN1	Circular	2416+15.00	BN-J1	BN-1	99.64	99.36	1	0.00	4.00	273.86	0.10	54.10	16.01	6.24	106.55	106.33	108.52
L_BN3	Circular	2421+75.00	BN-J2	BN-2	100.20	99.97	1	0.00	3.00	224.65	0.10	23.87	16.42	3.35	107.19	106.95	107.51
Link653	Circular		BR-1	RD-9	103.38	102.29	1	0.00	2.00	1087.00	0.10	5.77	15.52	2.55	106.90	106.60	109.50
L_BS11	Circular	2412+00.00	BS-1	7185(ml)	100.29	100.00	1	0.00	3.50	289.49	0.10	40.37	15.76	6.25	106.27	106.25	109.19
L_BS2	Circular	2417+50.00	BS-2	BS-J1	100.84	100.56	1	0.00	3.00	275.00	0.10	27.80	15.76	3.92	106.53	106.28	108.90
L_BS4	Circular	2423+00.00	BS-3	BS-J2	101.39	101.11	1	0.00	2.50	275.00	0.10	14.29	15.76	2.90	107.10	106.82	108.45
L_BS1	Circular	2414+75.00	BS-J1	BS-1	100.56	100.29	1	0.00	3.00	275.00	0.10	27.83	15.76	3.93	106.28	106.27	109.45
L_BS3	Circular	2420+25.00	BS-J2	BS-2	101.11	100.84	1	0.00	2.50	275.00	0.10	14.35	15.76	2.91	106.82	106.53	109.27
L-RD-2	Trapezoidal		RD-2	RD-3	104.30	103.79	1	2.00	4.00	508.00	0.10	7.62	15.81	1.06	106.35	106.34	109.50
L-RD-3	Circular		RD-3	RD-4	103.79	103.73	1	0.00	2.50	60.00	0.10	8.17	17.18	3.10	106.34	106.32	109.50
L-RD-4	Trapezoidal		RD-4	RD-5	103.73	103.12	1	2.00	4.00	613.00	0.10	9.10	17.21	1.08	106.32	106.32	109.50
L-RD-5	Trapezoidal		RD-5	RD-6	103.12	101.89	1	2.00	4.00	1225.00	0.10	12.60	17.17	1.07	106.32	106.30	109.50
L-RD-6	Trapezoidal		RD-6	RD-7	101.89	100.84	1	2.00	4.00	1054.00	0.10	-34.69	16.00	0.76	106.30	106.29	109.50
L-RD-7	Trapezoidal		RD-7	7185.00	100.84	100.33	1	2.00	4.00	510.00	0.10	-58.80	15.84	0.58	106.29	106.28	109.50
Link649	Circular		RD-8	7185.00	100.94	100.30	1	0.00	4.00	636.00	0.10	5.54	15.88	0.88	106.30	106.28	109.50
Link652	Circular		RD-9	RD-8	102.29	100.94	1	0.00	2.00	1352.00	0.10	5.83	15.87	2.18	106.60	106.30	109.50
Outfalls 8																	
L_BN5	Circular	2428+00.33	BN-4	BN-J3	95.56	95.31	1	0.00	3.00	249.67	0.10	-12.84	16.32	2.54	100.32	100.31	106.17
L_BN7	Circular	2433+00.33	BN-5	BN-J4	95.06	94.66	1	0.00	4.00	399.64	0.10	-25.67	16.25	2.44	100.31	100.30	106.47
L_BN9	Rectangular	2441+00.32	BN-6	BN-J5	94.26	93.96	1	4.00	4.00	299.68	0.10	38.66	17.03	2.46	100.28	100.28	106.22
L_BN11	Rectangular	2447+00.32	BN-7	BN-J6	93.66	93.26	1	7.00	5.00	399.68	0.10	164.76	16.79	4.85	100.27	100.26	106.22

Table 15.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (10-Year) - Outfalls 7-8

Model:E127PROP_10.XP & BW8PROP_10.XP **11/4/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_BN13	Rectangular	2455+00.00	BN-8	CN-1	92.86	92.54	1	8.00	5.00	323.44	0.10	174.93	16.83	4.67	100.25	100.24	105.56
L_BN6	Circular	2430+50.00	BN-J3	BN-5	95.31	95.06	1	0.00	3.00	250.33	0.10	-13.19	16.33	2.15	100.31	100.31	106.91
L_BN8	Circular	2437+00.00	BN-J4	BN-6	94.66	94.26	1	0.00	4.00	400.32	0.10	-26.79	16.25	2.22	100.30	100.28	107.61
L_BN10	Rectangular	2444+00.00	BN-J5	BN-7	93.96	93.66	1	4.00	4.00	300.32	0.10	38.68	17.03	2.42	100.28	100.27	107.41
L_BN12	Rectangular	2451+00.00	BN-J6	BN-8	93.26	92.86	1	8.00	5.00	400.00	0.10	165.92	16.85	4.21	100.26	100.25	107.61
Link615	Rectangular		B-R2	BS-J4	94.25	94.21	1	5.00	5.00	40.30	0.00	109.60	16.03	5.96	100.27	100.27	108.97
L_BS5	Circular	2428+00.00	BS-4	BS-J3	95.73	95.48	1	0.00	2.50	250.00	0.10	15.47	15.81	3.18	100.28	100.28	108.15
L_BS7	Circular	2433+00.00	BS-5	BS-6	95.23	94.83	1	0.00	3.00	400.00	0.10	25.88	15.81	5.04	100.28	100.28	108.45
L_BS8	Circular	2437+00.00	BS-6	BS-7	94.83	94.43	1	0.00	3.50	399.93	0.10	17.17	17.02	2.14	100.28	100.28	108.45
L_BS9	Circular	2441+00.00	BS-7	BS-J4	94.43	94.21	1	0.00	3.50	224.99	0.10	31.29	17.03	3.15	100.28	100.27	108.45
L_BS12	Rectangular	2445+50.00	BS-8	BN-7	93.98	93.66	1	6.00	5.00	319.53	0.10	107.50	16.07	4.69	100.27	100.27	108.30
L_BS6	Circular	2430+50.00	BS-J3	BS-5	95.48	95.23	1	0.00	2.50	250.00	0.10	15.47	15.81	3.18	100.28	100.28	108.90
L_BS10	Rectangular	2443+25.00	BS-J4	BS-8	94.21	93.98	1	6.00	5.00	225.00	0.10	108.32	16.10	4.76	100.27	100.27	108.97
Link618	Rectangular	211+57.61	BW8DET	CN-J13	87.75	87.61	1	9.00	6.00	130.00	0.00	204.10	15.80	5.99	100.17	100.17	102.50
L_OS4	Circular	2504+92.58	BW8-SE	CS-8	89.41	89.13	1	0.00	6.00	271.60	0.10	75.53	16.01	3.44	100.17	100.17	102.08
L_OS3	Rectangular	2499+06.76	BW8-SW	POND-6A	91.20	91.00	1	7.00	3.00	125.00	0.10	57.23	15.97	3.93	100.18	100.18	102.66
L_CN1	Rectangular	2458+23.49	CN-1	CN-J1	92.54	92.10	1	8.00	5.00	438.38	0.10	193.99	16.74	4.85	100.24	100.23	103.00
L_CN3	Rectangular	2467+00.30	CN-2	CN-J2	91.66	91.26	1	8.00	5.00	399.70	0.10	218.26	16.66	5.45	100.23	100.22	104.67
L_CN6	Rectangular	2477+80.30	CN-3	CN-4	90.58	90.26	1	10.00	5.00	320.22	0.10	284.63	16.60	5.69	100.41	100.20	101.82
L_CN7	Rectangular	2481+00.00	CN-4	CN-J4	90.26	89.86	1	9.00	6.00	400.00	0.10	298.70	16.59	6.24	100.20	100.20	101.42
L_CN10	Rectangular	2493+00.00	CN-5	CN-J6	89.06	88.71	1	9.00	6.00	349.96	0.10	345.10	16.19	6.95	100.19	100.19	101.47
L_CN12	Rectangular	2499+00.00	CN-6	CN-J7	88.46	88.16	1	9.00	6.00	299.99	0.10	415.48	16.22	8.20	100.18	100.18	101.32
L_CN14	Rectangular	2505+00.00	CN-7	CN-J8	87.86	87.73	2	7.00	6.00	137.61	0.10	654.66	16.14	8.22	100.18	100.17	100.87
L_CN22	Circular	2514+00.00	CN-8	CN-J15	90.00	89.70	1	0.00	4.00	245.69	0.10	25.01	16.01	3.18	100.17	100.17	100.27
L_CN2	Rectangular	2462+62.00	CN-J1	CN-2	92.10	91.66	1	8.00	5.00	438.18	0.10	194.00	16.74	4.85	100.23	100.23	104.34
L_CN17	Rectangular	2507+95.01	CN-J10	CN-J11	87.43	87.24	2	7.00	6.00	184.54	0.10	655.82	16.15	9.66	100.17	100.17	102.34
L_CN23	**Rectangular**	**2509+23.24**	**CN-J11**	**E135-01**	**87.24**	**87.19**	**2**	**8.00**	**8.00**	**60.06**	**0.10**	**855.50**	**16.10**	**11.68**	**100.17**	**100.17**	**101.94**
L_CN18	Rectangular	2510+49.51	CN-J12	CN-J11	87.41	87.24	1	9.00	6.00	165.16	0.10	222.62	15.87	7.19	100.17	100.17	101.49
L_CN19	Rectangular	2511+02.56	CN-J13	CN-J12	87.61	87.41	1	9.00	6.00	200.04	0.10	225.08	15.87	6.63	100.17	100.17	101.31
Link617	Rectangular	2511+54.31	CN-J15	BW8DET	88.20	88.00	1	6.00	6.00	130.00	0.00	196.02	15.80	8.83	100.17	100.17	101.13
L_CN4	Rectangular	2471+00.00	CN-J2	CN-J3	91.26	90.86	1	8.00	5.00	400.00	0.10	218.28	16.66	5.46	100.22	100.28	105.22
L_CN5	Rectangular	2475+00.00	CN-J3	CN-3	90.86	90.58	1	8.00	5.00	280.29	0.10	218.30	16.66	5.46	100.28	100.41	103.22
L_CN8	Rectangular	2485+00.00	CN-J4	CN-J5	89.86	89.46	1	9.00	6.00	399.93	0.10	303.47	16.59	6.25	100.20	100.19	103.42
L_CN9	Rectangular	2489+00.00	CN-J5	CN-5	89.46	89.06	1	9.00	6.00	400.00	0.10	307.04	16.57	6.27	100.19	100.19	102.87
L_CN11	Rectangular	2496+50.00	CN-J6	CN-6	88.71	88.46	1	9.00	6.00	249.97	0.10	345.71	16.48	7.05	100.19	100.18	102.32
L_CN13	Rectangular	2502+00.00	CN-J7	CN-7	88.16	87.86	2	7.00	6.00	300.00	0.10	612.92	16.07	7.43	100.18	100.18	102.37
L_CN15	Rectangular	2506+02.80	CN-J8	CN-J9	87.73	87.58	2	7.00	6.00	150.00	0.10	654.99	16.14	8.57	100.17	100.17	101.38
L_CN16	Rectangular	2506+95.66	CN-J9	CN-J10	87.58	87.43	2	7.00	6.00	150.00	0.10	655.34	16.15	8.99	100.17	100.17	101.85
L_CS1	Circular	2463+00.00	CS-1	CS-J1	95.44	95.19	1	0.00	3.00	249.96	0.10	-32.05	17.22	4.01	105.90	104.94	105.83
L_CS3	Circular	2468+00.00	CS-2	CS-3	93.94	93.64	1	0.00	3.50	299.95	0.10	-60.41	17.21	4.27	105.62	106.08	105.56
L_CS4	Circular	2471+00.00	CS-3	CS-J2	93.64	93.29	1	0.00	4.00	349.98	0.10	-62.27	17.21	4.75	106.08	104.11	106.61
L_CS6	Rectangular	2478+00.00	CS-4	CN-3	92.94	92.58	1	5.00	4.00	361.73	0.10	155.34	17.22	7.76	103.65	100.41	103.46
L_CS7	Circular	2481+00.00	CS-5	CS-J3	93.85	93.45	1	0.00	3.00	399.99	0.10	22.24	16.00	3.33	100.18	100.18	103.16
L_CS10	Circular	2491+00.00	CS-6	CS-J5	91.85	91.45	1	0.00	4.00	400.00	0.10	66.23	16.01	5.23	100.18	100.18	101.76
L_CS13	Rectangular	2500+00.00	CS-7	CN-J7	90.69	90.16	1	8.00	4.00	524.02	0.10	234.45	16.00	7.92	100.18	100.18	100.71
L_CS14	Circular	2507+00.00	CS-8	CS-J7	89.13	88.73	1	0.00	6.00	399.95	0.10	112.61	15.81	5.01	100.17	100.17	100.81
L_CS15	Circular	2514+00.00	CS-9	CS-J7	91.53	91.23	1	0.00	3.50	299.94	0.10	41.72	15.76	5.99	100.17	100.17	100.46
L_CS2	Circular	2465+50.00	CS-J1	CS-2	94.69	94.44	1	0.00	3.00	250.00	0.10	-49.97	17.22	3.42	104.94	105.62	106.81
L_CS5	Circular	2474+50.00	CS-J2	CS-4	93.29	92.94	1	0.00	4.00	349.89	0.10	-66.96	17.21	4.90	104.11	103.65	105.03
L_CS8	Circular	2485+00.00	CS-J3	CS-J4	93.45	93.15	1	0.00	3.00	299.92	0.10	22.26	16.01	3.14	100.18	100.18	103.86
L_CS9	Circular	2488+00.00	CS-J4	CS-6	93.15	92.85	1	0.00	3.00	300.00	0.10	22.37	16.01	3.16	100.18	100.18	102.81
L_CS11	Circular	2495+00.00	CS-J5	CS-J6	91.45	91.15	1	0.00	4.00	300.00	0.10	66.69	16.01	5.15	100.18	100.18	102.46
Link616	Circular	2498+00.00	CS-J6	POND-6A	91.15	91.00	1	0.00	4.00	70.00	0.00	66.65	16.01	5.07	100.18	100.18	101.41
L_CS16	Circular	2511+00.00	CS-J7	CN-J15	88.73	88.20	1	0.00	6.00	535.43	0.10	152.20	15.79	7.26	100.17	100.17	101.51
BS-ML	Circular		ML-03	ML-04	95.21	94.39	1	0.00	5.00	819.64	0.00	55.53	16.05	3.46	100.27	100.27	109.04
L_BS14	Rectangular	2441+61.51	ML-04	B-R2	94.39	94.25	1	5.00	5.00	132.33	0.10	106.07	16.03	8.51	100.27	100.27	108.97
L_OS2	Circular	2478+70.48	ML-05	CS-4	93.45	92.94	1	0.00	3.00	508.23	0.10	55.36	17.21	7.71	106.56	103.65	106.46
L_CS12	Rectangular		POND-6A	CS-7	91.00	90.69	1	8.00	4.00	120.00	0.10	189.33	16.01	5.98	100.18	100.18	102.50
L_OS1	Circular	2480+89.48	SNT01	CS-4	93.24	92.94	1	0.00	4.00	297.79	0.10	111.87	17.20	0.00	###########	###########	104.71
L_OS1	Circular	2480+89.48	SNT01	CS-4	93.24	92.94	1	0.00	4.00	297.79	0.10	111.87	17.20	0.00	###########	###########	104.71

Table 15.1-A

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (10-Year) - Outfalls 8A-8B

Model:BW8South_Prop_10.xp **2/27/2012**

Name	Link Type	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 8A-8B																
L_L-L24	Rectangular	DI-L24	DI-L25	95.24	93.96	1	6.00	4.00	749.30	0.17	182	16.09	7.56	100.54	97.96	103.76
L_L-L24	Trapezoidal	DI-L24	DI-L25	102.21	101.80	1	0.00	0.50	749.30	0.00	0	0.00	0.00	97.96	97.96	103.76
L_L-F2	Circular	CI-F2	DI-L24	97.82	97.73	1	0.00	1.50	46.59	0.19	7	15.71	3.82	100.60	100.54	102.84
L_L-L23	Rectangular	MH-L23	DI-L24	95.77	95.24	1	6.00	4.00	326.54	0.16	171	16.18	7.13	101.52	100.54	104.00
L_L-E5	Circular	CI-E5	MH-L23	98.55	98.28	1	0.00	1.50	93.07	0.29	4	15.75	3.12	101.56	101.52	103.39
L_L-L22	Rectangular	MH-L22	MH-L23	95.92	95.77	1	6.00	4.00	105.86	0.14	170	16.20	7.05	101.84	101.52	104.00
L_L-D9	Circular	CI-D9	MH-L22	97.62	97.40	1	0.00	2.50	93.23	0.24	4	15.71	1.90	101.84	101.84	103.39
L_L-L21	Rectangular	L-21	MH-L22	96.06	95.92	1	6.00	4.00	101.78	0.14	168	16.21	6.99	102.13	101.84	104.00
L_L-D8	Circular	CI-D8	CI-D9	97.71	97.62	1	0.00	2.50	51.33	0.18	-1	15.71	0.32	101.84	101.84	103.24
L-L21	Rectangular	BW-J3	L-21	96.18	96.06	1	6.00	3.00	85.02	0.28	116	16.72	6.44	102.29	102.13	103.18
L_L-C7	Circular	CI-C7	L-21	96.61	96.06	1	6.00	2.00	139.50	0.50	10	15.75	3.26	102.34	102.13	103.00
L_L-SD2	Natural	SD-2	SD-3	99.76	97.65	1	6.00	3.00	204.00	1.00	66	16.95	2.57	103.92	103.88	104.46
L_L-SD1	Natural	SD-1	SD-2	100.42	99.76	1	4.00	0.00	597.00	0.11	67	15.73	2.04	103.95	103.92	105.12
L_L-A12	Rectangular	CI-A12	SD-1	100.53	100.42	1	4.00	2.00	89.19	0.14	22	15.75	2.73	103.97	103.95	105.11
L_L-B12	Rectangular	CI-B12	SD-1	100.51	100.42	1	4.00	2.00	88.58	0.10	49	15.75	6.09	104.18	103.95	104.88
L_L-A10	Rectangular	DI-A10	CI-A12	100.84	100.53	1	4.00	2.00	312.29	0.10	11	15.75	1.32	103.98	103.97	104.00
L_L-OFFB12	Rectangular	OFF-B12	CI-B12	100.53	100.51	1	4.00	2.00	24.70	0.08	44	15.75	5.53	104.24	104.18	104.88
L_L-B10	Rectangular	DI-B10	CI-B12	100.70	100.52	1	4.00	2.00	305.74	0.06	4	16.51	1.19	104.18	104.18	104.00
L_L-R12	Rectangular	DI-R12	DI-R13	97.92	96.87	1	5.00	2.00	707.92	0.15	15	15.79	3.36	98.83	97.76	102.60
L_L-R12	Trapezoidal	DI-R12	DI-R13	102.10	101.13	1	0.00	0.50	707.92	0.00	0	0.00	0.00	97.76	97.76	102.60
L_L-R11	Rectangular	CI-R11	DI-R12	97.99	97.92	1	3.00	2.00	59.15	0.12	5	15.75	2.27	98.86	98.83	102.58
L-C5	Rectangular	BW-C4	BW-C5	97.44	97.34	1	6.00	3.00	98.53	0.00	110	15.67	6.38	103.68	103.51	103.04
L_L-C3	Circular	BW-C3	BW-J2	97.91	97.60	1	3.00	3.00	155.98	0.20	48	15.75	8.31	104.18	103.85	103.83
Link38	Rectangular	BW-C5	BW-C6	97.34	96.82	1	6.00	3.00	344.53	0.11	113	16.72	6.28	103.50	102.86	103.50
L_L-B1	Rectangular	B-1	BW-J2	97.67	97.60	1	3.00	2.00	74.00	0.10	25	16.82	4.20	103.87	103.85	102.40
L_L-C2	Circular	BW-C2	BW-C3	98.83	97.91	1	3.00	3.00	229.11	0.30	37	15.76	5.80	104.69	104.18	105.06
L_L-C1	Circular	BW-C1	BW-C2	100.98	99.33	1	3.00	2.50	413.63	0.40	25	15.75	6.72	105.75	104.69	121.33
L-C6	Circular	A-1	BW-C5	97.45	97.34	1	4.00	2.50	73.37	0.15	-47	15.68	7.17	103.51	103.50	102.41
L_L-D4	Rectangular	BW-D4	BW-D5	96.47	96.28	1	5.00	3.00	197.03	0.00	70	15.76	5.86	102.83	102.53	101.87
L_L-D3	Rectangular	BW-D3	BW-D4	96.72	96.47	1	4.00	3.00	197.03	0.20	51	15.88	4.23	103.10	102.83	102.87
L_L-D2	Circular	BW-D2	BW-D3	98.54	96.72	1	4.00	3.00	453.82	0.20	32	16.00	7.23	104.10	103.10	104.90
L_L-D1	Circular	BW-D1	BW-D2	101.48	99.54	1	4.00	2.00	485.94	0.20	16	0.00	6.54	106.34	104.10	125.20
L_L-A2	Rectangular	A-2	SD-2	99.85	99.76	1	4.00	2.00	64.47	0.50	8	15.75	2.00	103.93	103.92	104.14
L-BWJ1	Rectangular	SD-3	BW-J1	97.65	97.48	2	4.00	2.00	33.75	0.12	78	16.90	4.83	103.88	103.75	103.44
Link35	Rectangular	BW-J1	BW-C4	97.48	97.44	1	6.00	3.00	42.47	0.00	108	15.67	6.10	103.75	103.68	103.38
Link34	Rectangular	BW-J2	BW-J1	97.60	97.48	1	4.00	3.00	126.52	0.00	63	15.73	8.38	103.85	103.75	103.56
Link37	Circular	POND6F	A-1	97.60	97.45	1	4.00	2.50	39.25	0.00	20	16.76	4.12	103.52	103.51	103.18
L-BWJ3	Rectangular	BW-C6	BW-C7	96.82	96.69	1	6.00	3.00	85.83	0.00	114	16.72	6.30	102.86	102.70	103.76
L-D5	Rectangular	BW-D5	L-21	96.28	96.06	1	5.00	3.00	216.57	0.00	78	15.76	5.19	102.53	102.13	102.53
Link51	Circular	BW-D6	BW-D5	97.76	97.28	1	0.00	2.00	484.18	0.10	5	15.75	1.68	102.69	102.53	102.53
DummyLink	Circular	BW-D6	CI-R11	0.05	0.00	1	0.00	0.05	10.00	0.00	0	0.00	0.00	0.00	0.00	102.53
L_L-G3	Circular	CI-G3	DI-L25	96.55	96.46	1	0.00	1.50	46.65	0.19	5	15.75	3.64	98.07	97.96	101.92
L_L-A7	Rectangular	CI-A7	DI-R13	96.96	96.87	1	3.00	2.00	62.78	0.14	5	15.75	2.41	97.80	97.76	101.88
L-C4.5	Rectangular	BW-C7	BW-J3	96.69	96.18	1	6.00	3.00	341.92	0.00	116	16.72	6.44	102.70	102.29	104.12
L-C4.5	Trapezoidal	BW-C7	BW-J3	101.69	101.18	1	10.00	2.00	341.92	0.00	19	16.20	1.37	102.70	102.29	104.12
L_L-B9	Rectangular	CI-B9	A-2	99.88	99.85	1	4.00	2.00	30.84	0.13	6	15.75	0.97	103.93	103.93	104.00
Link48	Rectangular	POND6G	B-1	97.76	97.67	1	3.00	2.00	90.00	0.00	25	16.90	4.10	103.88	103.87	102.90

Table 16.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (10-Year) - Outfalls 9-16

7/12/2011

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 9-10																	
L_L-A-12	Rectangular	2534+93.84	A-12	A-13	88.00	87.59	1.00	6.00	4.00	205.56	0.20	166	16.02	6.91	95.13	94.90	95.64
L_L-A-13	Rectangular	2536+99.39	A-13	A-14	87.59	87.39	1.00	6.00	4.00	100.62	0.20	179	16.01	7.46	94.90	94.78	94.82
L_L-A-14	Rectangular	2538+00.00	A-14	A-15	87.39	87.09	1.00	6.00	4.00	150.06	0.20	186	16.01	7.73	94.78	94.61	94.42
L_L-A-15	Rectangular	2539+50.05	A-15	A-17	87.09	86.44	1.00	6.00	4.00	324.37	0.20	190	16.01	9.10	94.61	94.22	94.94
L_L-A-17	Rectangular	2542+74.44	A-17	A-18	86.44	86.09	1.00	7.00	4.00	176.84	0.20	228	16.00	8.12	94.22	94.04	94.86
Link766	Rectangular	2542+74.44	A-17OFF	A-17	86.47	86.44	1.00	4.00	4.00	15.00	0.20	-37	0.00	2.72	94.22	94.22	94.86
L_L-A-18	Rectangular	2544+51.28	A-18	A-19	86.09	85.70	1.00	7.00	4.00	192.55	0.20	232	16.00	8.29	94.04	93.84	94.24
L_L-A-19	Rectangular	2546+43.84	A-19	A-20	85.70	85.44	1.00	7.00	4.00	129.54	0.20	237	16.00	8.47	93.84	93.70	93.56
L_L-A-2	Circular	2520+46.69	A-2	A-3	95.80	95.60	1.00	0.00	2.00	98.60	0.20	10	0.00	5.74	97.17	96.91	101.43
L_L-A-20	Rectangular	2547+73.38	A-20	A-21	85.44	85.20	1.00	7.00	4.00	120.46	0.20	241	16.00	8.59	93.70	93.58	93.16
L_L-A-21	Rectangular	2548+93.84	A-21	A-22	85.20	84.89	1.00	7.00	4.00	156.16	0.20	244	16.00	8.99	93.58	93.42	93.16
L_L-A-22	Rectangular	2550+50.00	A-22	A-23	84.89	84.70	1.00	7.00	4.00	92.91	0.20	260	16.00	10.23	93.42	93.33	93.16
L_L-A-23	Rectangular	2551+42.91	A-23	A-24	83.70	83.48	1.00	7.00	5.00	109.98	0.20	278	16.00	9.98	93.33	93.27	93.16
Link759	Circular		A-23B	A-23	85.75	85.70	1.00	0.00	3.00	15.00	0.31	67	0.00	12.47	93.33	93.33	92.47
Link810	Circular	2551+42.91	A-23OFF	A-23B	89.42	88.94	1.00	0.00	1.50	240.00	0.20	15	21.85	8.50	95.23	93.33	94.00
Link756	Rectangular	2552+52.66	A-24	A-OUT2	83.48	83.30	1.00	7.00	5.00	92.12	0.20	284	16.00	10.62	93.27	93.22	92.85
Link811	Circular		A-24OFF	A-24	90.10	89.54	1.00	0.00	1.50	280.00	0.20	7	15.93	4.68	93.30	93.27	93.50
L_L-A-25	Circular	2520+00.28	A-25	A-26	91.78	91.35	1.00	0.00	3.50	175.50	0.25	44	15.90	5.33	98.60	98.25	99.10
L_L-A-26	Circular	2521+75.78	A-26	A-27	91.35	91.03	1.00	0.00	3.50	124.22	0.25	54	15.90	7.53	98.25	97.84	98.23
L_L-A-27	Circular	2523+00.00	A-27	A-28	90.53	90.28	1.00	0.00	4.00	100.64	0.25	67	15.90	5.93	97.84	97.67	97.61
Link753	Circular	2522+99.46	A-27OFF	A-27	92.57	92.53	1.00	0.00	2.00	15.01	0.25	9	15.90	5.96	98.38	97.84	97.61
L_L-A-28	Circular	2524+00.64	A-28	A-29	90.28	89.91	1.00	0.00	4.00	150.67	0.25	73	15.90	6.99	97.67	97.40	97.96
L_L-A-29	Circular	2525+51.30	A-29	A-30	89.91	89.31	1.00	0.00	4.00	238.42	0.25	78	15.90	9.08	97.40	96.95	98.48
L_L-A-3	Circular	2521+45.30	A-3	A-4	95.10	94.70	1.00	0.00	2.50	199.17	0.20	14	0.00	5.58	96.91	96.73	101.04
L_L-A-30	Rectangular	2527+89.73	A-30	A-31	89.31	88.84	1.00	4.00	4.00	186.43	0.25	128	16.05	9.04	96.95	96.18	98.56
L_L-A-31	Rectangular	2529+76.16	A-31	A-32	88.84	88.54	1.00	5.00	4.00	122.24	0.25	128	15.90	6.40	96.18	95.91	97.62
L_L-A-32	Rectangular	2530+98.40	A-32	A-34	88.54	88.03	1.00	5.00	4.00	201.60	0.25	133	16.05	7.68	95.91	95.47	97.01
L_L-A-34	Rectangular	2533+00.00	A-34	A-35	88.03	87.66	1.00	5.00	4.00	150.28	0.25	155	15.95	8.79	95.47	95.14	96.01
L_L-A-35	Rectangular	2534+50.28	A-35	A-36	86.66	85.91	1.00	5.00	5.00	299.38	0.25	204	15.95	8.13	95.14	94.66	96.53
Link745	Circular	2534+04.35	A-35OFF	A-35	88.78	88.66	1.00	0.00	3.00	48.32	0.25	45	16.00	8.24	95.22	95.14	94.00
L_L-A-36	Rectangular	2537+49.76	A-36	A-37	85.91	85.53	1.00	5.00	5.00	150.75	0.25	208	15.95	8.30	94.66	94.42	96.53
L_L-A-37	Rectangular	2539+00.50	A-37	A-38	85.53	85.16	1.00	5.00	5.00	149.75	0.25	212	15.95	8.46	94.42	94.18	96.00
L_L-A-38	Rectangular	2540+50.25	A-38	A-39	85.16	84.72	1.00	5.00	5.00	174.51	0.25	218	15.94	8.71	94.18	93.88	95.48
L_L-A-39	Rectangular	2542+24.76	A-39	A-40	84.72	84.35	1.00	5.00	5.00	150.01	0.25	223	15.93	8.90	93.88	93.61	94.87
L_L-A-4	Circular	2523+44.57	A-4	A-5	92.92	92.57	1.00	0.00	3.00	174.36	0.20	21	0.00	6.06	96.73	96.60	100.24
L_L-A-40	Rectangular	2543+74.76	A-40	A-41	84.35	83.97	1.00	5.00	5.00	149.99	0.25	227	15.93	9.07	93.61	93.42	94.34
L_L-A-41	Rectangular	2545+24.75	A-41	A-42	83.97	83.66	1.00	5.00	5.00	125.00	0.25	231	15.93	9.23	93.42	93.35	93.82
L_L-A-42	Rectangular	2546+49.76	A-42	A-43	83.66	83.28	1.00	5.00	5.00	152.41	0.25	234	15.94	9.52	93.35	93.26	93.38
L_L-A-43	Rectangular	2548+02.17	A-43	A-OUT1	83.28	83.00	1.00	5.00	5.00	111.15	0.25	243	15.98	10.49	93.26	93.23	93.16
L_L-A-44	Circular	2518+50.11	A-44	A-25	92.66	92.28	1.00	0.00	3.00	150.17	0.25	38	15.90	7.51	99.13	98.60	99.85
L_L-A-5	Rectangular	2525+19.00	A-5	A-6	90.38	90.03	1.00	5.00	4.00	175.02	0.20	123	16.00	6.27	96.60	96.21	99.54
L_L-A-50	Circular	2550+00.00	A-50	A-OUT1	85.11	85.00	1.00	0.00	2.00	36.79	0.30	14	19.09	5.70	93.23	93.23	93.16
L_L-A-51	Circular	2551+34.39	A-51	A-50	87.55	87.15	1.00	0.00	2.00	134.39	0.30	14	19.09	5.65	93.33	93.23	93.13
L_L-A-5OFF	Circular	2525+19.00	A-5OFF	A-5	90.40	90.38	1.00	0.00	2.50	15.00	0.12	100	16.00	20.11	97.46	96.60	97.77
L_L-A-6	Rectangular	2526+94.02	A-6	A-7	90.03	89.68	1.00	5.00	4.00	175.23	0.20	128	16.00	6.44	96.21	95.86	98.84
L_L-A-7	Rectangular	2528+69.23	A-7	A-8	89.68	89.42	1.00	5.00	4.00	132.85	0.20	133	16.00	8.53	95.86	95.66	98.14
L_L-A-8	Rectangular	2530+02.09	A-8	A-9	88.99	88.53	1.00	6.00	4.00	229.25	0.20	133	15.70	6.17	95.66	95.41	97.61
L_L-A-9	Rectangular	2532+31.37	A-9	A-12	88.53	88.00	1.00	6.00	4.00	262.46	0.20	139	15.70	6.09	95.41	95.13	96.69
L_L-AA-1	Circular	2555+43.84	AA-1	AA-2	85.51	85.40	1.00	0.00	2.50	110.43	0.10	14	18.32	3.25	93.22	93.15	93.08
L_L-AA-10	Rectangular	2560+00.00	AA-10	MH-AA1	85.20	85.05	1.00	5.00	3.00	150.84	0.10	39	0.00	6.28	93.15	93.21	92.95
L_L-AA-11	Rectangular	2561+49.76	AA-11	AA-10	85.35	85.20	1.00	4.00	3.00	149.76	0.10	35	0.00	6.81	93.15	93.15	92.93
L_L-AA-12	Rectangular	2562+99.76	AA-12	AA-11	85.50	85.35	1.00	4.00	3.00	150.00	0.10	27	0.00	3.46	93.15	93.15	92.87
L_L-AA-13	Rectangular	2564+49.87	AA-13	AA-12	86.65	86.50	1.00	3.00	3.00	150.12	0.10	24	0.00	6.24	93.19	93.15	93.49
L_L-AA-14	Circular	2566+99.89	AA-14	AA-13	86.90	86.65	1.00	0.00	3.00	250.02	0.10	20	0.00	6.41	93.36	93.19	93.89
L_L-AA-15	Circular	2568+25.32	AA-15	AA-14	87.03	86.90	1.00	0.00	3.00	125.43	0.10	17	0.00	3.28	93.33	93.36	93.45
L_L-AA-16	Circular	2569+00.00	AA-16	AA-15	87.60	87.53	1.00	0.00	2.50	74.68	0.10	13	0.00	5.49	93.24	93.33	93.19
L_L-AA-17	Circular	2569+75.51	AA-17	AA-16	87.68	87.60	1.00	0.00	2.50	75.52	0.10	8	0.00	2.26	93.32	93.24	93.45
L_L-AA-18	Circular	2571+00.61	AA-18	AA-17	88.30	88.18	1.00	0.00	2.00	125.10	0.10	4	0.00	3.94	93.48	93.32	93.89
L_L-AA-2	Circular	2556+54.26	AA-2	MH-AA2	85.40	85.32	1.00	0.00	2.50	78.43	0.10	14	18.33	5.32	93.15	93.13	93.03

Table 16.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (10-Year) - Outfalls 9-16

7/12/2011

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_L-AA-3	Circular	2559+00.00	AA-3	MH-AA2	83.85	83.68	1.00	0.00	4.00	168.40	0.10	37	0.00	6.68	93.14	93.13	92.97
L_L-AA-4	Circular	2559+93.84	AA-4	AA-3	83.94	83.85	1.00	0.00	4.00	93.84	0.10	33	0.00	4.48	93.14	93.14	92.96
L_L-AA-5	Circular	2561+26.92	AA-5	AA-4	84.58	84.44	1.00	0.00	3.50	133.09	0.10	27	0.00	6.29	93.15	93.14	92.93
L_L-AA-54	Circular	2556+01.01	AA-54	AA-55	86.05	85.75	1.00	0.00	2.50	148.99	0.20	11	0.00	3.38	93.17	93.15	93.03
L_L-AA-55	Circular	2557+50.00	AA-55	MH-AA1	85.75	85.55	1.00	0.00	2.50	99.21	0.20	17	0.00	6.01	93.15	93.21	93.00
L_L-AA-6	Circular	2562+50.89	AA-6	AA-5	84.70	84.58	1.00	0.00	3.50	123.97	0.10	24	0.00	3.72	93.15	93.15	92.89
L_L-AA-7	Circular	2565+93.84	AA-7	AA-6	85.54	85.20	1.00	0.00	3.00	342.94	0.10	20	0.00	5.97	93.18	93.15	92.76
L_L-AA-8	Circular	2567+00.00	AA-8	AA-7	85.65	85.54	1.00	0.00	3.00	106.16	0.10	14	0.00	2.50	93.18	93.18	92.74
L_L-AA-9	Circular	2568+43.84	AA-9	AA-8	86.79	86.65	1.00	0.00	2.00	143.84	0.10	12	19.70	4.47	93.21	93.18	92.85
L_AA-OUT1	**Natural**	**2556+73.29**	**AA-OUT1**	**E117-OUT**	**78.62**	**78.50**	**1.00**	**0.00**	**0.00**	**35.00**	**0.34**	**1423**	**17.07**	**10.22**	**93.13**	**93.13**	**114.24**
L_L-A-OUT1	Natural	2549+13.31	A-OUT1	MH-A4	78.69	78.69	1.00	0.00	0.00	70.00	0.00	1245	16.82	6.54	93.23	93.23	114.00
L_L-A-OUT2	Natural	2553+44.69	A-OUT2	AA-OUT1	79.10	78.62	1.00	0.00	0.00	293.00	0.16	1388	16.82	3.75	93.22	93.13	113.93
L_GES-1	Circular		GES-1	GES-2	81.87	81.40	1.00	0.00	4.00	238.00	0.20	122	15.90	9.58	95.16	94.60	93.50
L_GES-2	Circular		GES-2	GES-3	81.40	80.91	1.00	0.00	4.00	240.00	0.20	122	15.91	9.60	94.60	94.07	93.50
L_GES-3	Circular		GES-3	GES-4	80.41	79.47	1.00	0.00	4.50	668.00	0.14	122	15.91	7.61	94.07	93.31	93.00
L_GES-4	Circular		GES-4	A-OUT1	79.47	78.81	1.00	0.00	4.50	22.00	3.00	122	15.91	7.61	93.31	93.23	90.80
L_L-MH-A1	Natural		MH-A1	A-OUT2	79.03	79.10	1.00	0.00	0.00	70.00	-0.10	1272	16.82	2.86	93.22	93.22	114.08
L_L-MH-A2	Natural		MH-A2	MH-A1	78.78	79.03	1.00	0.00	0.00	10.00	-2.50	1267	16.82	2.18	93.22	93.22	113.93
L_L-MH-A3	Natural		MH-A3	MH-A2	78.69	78.78	1.00	0.00	0.00	424.00	-0.02	1262	16.81	2.26	93.23	93.22	114.00
L_L-MH-A4	Natural		MH-A4	MH-A3	78.69	78.69	1.00	0.00	0.00	25.00	0.00	1252	16.81	14.61	93.23	93.23	104.96
L_L-MH-AA1	Circular	2558+49.18	MH-AA1	MH-AA2	81.63	81.29	1.00	6.00	4.50	342.10	0.10	134	0.00	10.37	93.21	93.13	92.98
L_L-MH-AA2	Circular	2557+31.95	MH-AA2	AA-OUT1	80.29	80.00	1.00	6.00	5.50	164.00	0.18	165	0.00	9.96	93.13	93.13	93.01
L-POND5C	Circular		POND5C	A-22	84.96	84.89	1.00	0.00	3.00	74.00	0.10	-24	0.00	3.95	93.42	93.42	94.80
L-POND6C	Circular		POND6C	A-12	88.10	88.00	1.00	0.00	3.00	45.00	0.22	-30	0.00	4.32	95.13	95.13	96.50
L-POND6D	Circular		POND6D	A-34	88.23	88.03	1.00	0.00	3.00	100.00	0.20	20	16.00	3.82	95.49	95.47	96.50
L-POND6E	Rectangular		POND6E	A-30	89.42	89.31	1.00	5.00	4.00	113.50	0.10	54	16.00	3.86	97.00	96.95	98.00
Outfalls 11																	
L_L-B-10	Rectangular	2581+43.61	B-10	B-12	83.21	82.84	1.00	4.00	3.00	366.26	0.10	33	16.01	4.09	90.32	90.32	90.66
L_L-B-12	Rectangular	2585+09.85	B-12	B-12A	82.84	82.67	1.00	5.00	3.00	167.98	0.10	38	15.98	3.89	90.32	90.32	90.35
L_L-B-12A	Rectangular	2586+77.83	B-12A	B-OUT1	82.67	82.66	1.00	5.00	3.00	10.07	0.12	43	15.99	4.39	90.32	90.32	90.29
L_L-B-13	Circular	2572+99.86	B-13	B-14	87.15	87.00	1.00	0.00	2.00	150.25	0.10	3	15.77	2.69	90.35	90.36	93.59
L_L-B-14	Circular	2574+50.10	B-14	B-15	86.50	86.45	1.00	0.00	2.50	49.91	0.10	7	15.79	3.52	90.36	90.35	92.61
L_L-B-15	Circular	2575+00.00	B-15	B-16	85.95	85.88	1.00	0.00	3.00	75.20	0.10	10	15.82	2.57	90.35	90.35	92.29
L_L-B-16	Rectangular	2575+75.19	B-16	B-17	85.88	85.78	1.00	3.00	3.00	100.00	0.10	13	15.84	2.50	90.35	90.36	92.55
L_L-B-17	Rectangular	2576+75.19	B-17	B-18	85.78	85.48	1.00	3.00	3.00	299.81	0.10	16	16.00	3.07	90.36	90.36	92.90
L_L-B-18	Rectangular	2579+75.01	B-18	B-19	85.48	85.35	1.00	3.00	3.00	124.99	0.10	20	16.01	4.01	90.36	90.35	92.20
L_L-B-19	Rectangular	2581+00.00	B-19	B-20	85.35	85.25	1.00	4.00	3.00	101.87	0.10	26	16.01	4.03	90.35	90.35	91.39
L_L-B-20	Rectangular	2582+01.88	B-20	B-OUT3	85.26	85.12	1.00	4.00	3.00	133.92	0.10	32	16.01	5.49	90.35	90.36	91.75
L_L-B-22	Circular	2588+00.00	B-22	B-OUT1	82.87	82.66	1.00	0.00	2.50	105.78	0.20	15	20.61	3.17	90.32	90.32	90.24
L_L-B-24	Circular	2589+33.43	B-24	B-22	83.64	83.37	1.00	0.00	2.00	133.43	0.20	15	20.61	4.57	90.32	90.32	90.18
L_L-B-25	Rectangular	2585+99.85	B-25	B-OUT3	80.36	80.11	1.00	5.00	3.00	259.23	0.10	62	16.00	4.10	90.35	90.36	91.14
L_L-B-26	Rectangular	2587+00.00	B-26	B-25	80.46	80.36	1.00	5.00	3.00	100.15	0.10	57	16.00	3.75	90.35	90.35	90.49
L_L-B-27	Rectangular	2587+49.85	B-27	B-26	80.51	80.46	1.00	5.00	3.00	49.85	0.10	52	16.00	3.48	90.35	90.35	90.66
L_L-B-28	Rectangular	2588+74.85	B-28	B-27	80.64	80.51	1.00	4.00	3.00	125.00	0.10	49	16.00	4.08	90.35	90.35	91.10
L_L-B-3	Circular	2571+68.84	B-3	B-4	85.18	85.01	1.00	0.00	2.00	174.85	0.10	4	16.00	2.86	90.32	90.32	92.72
L_L-B-4	Circular	2573+43.70	B-4	B-5	84.51	84.31	1.00	0.00	2.50	199.78	0.10	9	16.01	3.18	90.32	90.32	92.02
L_L-B-5	Circular	2575+43.50	B-5	B-6	83.81	83.66	1.00	0.00	3.00	149.89	0.10	14	16.01	2.81	90.32	90.32	91.22
L_L-B-6	Rectangular	2576+93.40	B-6	B-7	83.66	83.51	1.00	3.00	3.00	150.00	0.10	18	16.01	2.95	90.32	90.32	91.03
L_L-B-7	Rectangular	2578+43.40	B-7	B-9	83.51	83.35	1.00	4.00	3.00	156.60	0.10	22	16.02	2.65	90.32	90.32	90.90
L_L-B-9	Rectangular	2580+00.00	B-9	B-10	83.35	83.21	1.00	4.00	3.00	143.61	0.10	30	16.01	3.52	90.32	90.32	90.78
L_L-B-OUT1	Trapezoidal	2586+87.89	B-OUT1	MH-B4	79.59	79.48	1.00	10.00	11.00	109.00	0.10	490	16.04	3.65	90.32	90.32	90.65
L_L-B-OUT3	Trapezoidal	2583+35.81	B-OUT3	MH-B6	80.09	80.01	1.00	10.00	11.00	80.00	0.10	766	16.53	3.34	90.36	90.35	92.21
L_L-MH-B1	Circular	2589+53.69	MH-B1	MH-B2	80.92	80.76	1.00	0.00	3.00	115.47	0.14	43	16.00	6.03	90.36	90.35	92.29
L_L-MH-B2	Rectangular	2589+54.24	MH-B2	MH-B3	80.76	80.72	1.00	4.00	3.00	41.54	0.10	43	15.99	3.56	90.35	90.35	91.38
L_L-MH-B3	Rectangular	2589+54.24	MH-B3	B-28	80.72	80.64	1.00	4.00	3.00	79.39	0.10	43	16.00	3.55	90.35	90.35	91.38
L_L-MH-B4	**Trapezoidal**		**MH-B4**	**SYS-B-OUT**	**79.48**	**79.16**	**1.00**	**10.00**	**11.00**	**330.00**	**0.10**	**482**	**16.01**	**4.37**	**90.32**	**90.30**	**91.00**
L_L-MH-B5	Trapezoidal		MH-B5	B-OUT1	79.67	79.59	1.00	10.00	11.00	86.00	0.09	456	16.54	3.16	90.33	90.32	91.00
L_L-MH-B6	Trapezoidal		MH-B6	MH-B5	80.01	79.67	1.00	10.00	11.00	337.00	0.10	474	16.54	3.09	90.35	90.33	91.50
L_L-MH-B7	Trapezoidal		MH-B7	B-OUT3	83.18	80.09	1.00	10.00	11.00	36.00	8.58	1114	16.52	6.81	90.33	90.36	94.80
L_L-MH-B8	Natural		MH-B8	MH-B7	83.86	83.18	1.00	0.00	0.00	206.00	0.33	458	16.53	8.40	90.79	90.33	93.73

Table 16.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (10-Year) - Outfalls 9-16

7/12/2011

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 12																	
L_L-C-1	Circular	2597+00.00	C-1	MH-C1	82.00	81.93	1.00	0.00	3.00	34.91	0.20	19	16.01	2.58	89.84	89.84	89.81
L_L-C-12	Rectangular	2603+49.85	C-12	C-6	81.15	81.05	1.00	4.00	3.00	100.09	0.10	33	16.01	2.77	89.84	89.84	89.32
L_L-C-13	Rectangular	2604+69.85	C-13	C-12	81.27	81.15	1.00	3.00	3.00	120.00	0.10	31	16.01	3.40	89.84	89.84	89.23
L_L-C-14	Rectangular	2605+00.00	C-14	C-13	81.30	81.27	1.00	3.00	3.00	30.15	0.10	27	16.01	3.04	89.84	89.84	89.21
L_L-C-15	Circular	2605+69.85	C-15	C-14	81.37	81.30	1.00	0.00	3.00	69.85	0.10	25	16.00	3.49	89.84	89.84	89.08
L_L-C-2	Rectangular	2598+24.99	C-2	MH-C1	80.63	80.54	1.00	4.00	3.00	90.09	0.10	45	16.01	3.71	89.84	89.84	89.72
L_L-C-21	Circular	2598+46.95	C-21	MH-C2	82.35	82.09	1.00	0.00	3.00	256.54	0.10	16	15.78	3.75	89.84	89.83	89.70
L_L-C-22	Circular	2600+00.00	C-22	C-21	82.50	82.35	1.00	0.00	3.00	153.05	0.10	12	15.79	2.78	89.84	89.84	89.59
L_L-C-23	Circular	2601+55.69	C-23	C-22	83.66	83.50	1.00	0.00	2.00	155.69	0.10	9	20.30	2.93	89.84	89.84	89.47
L_L-C-30	Circular	2592+36.88	C-30	C-31	83.93	83.70	1.00	0.00	2.00	112.98	0.20	3	16.01	1.91	89.84	89.84	91.10
L_L-C-31	Circular	2593+49.85	C-31	C-32	83.70	83.30	1.00	0.00	2.00	200.00	0.20	6	16.02	3.17	89.84	89.84	90.36
L_L-C-32	Circular	2595+49.85	C-32	C-1	82.80	82.50	1.00	0.00	2.50	150.15	0.20	12	16.02	2.83	89.84	89.84	89.92
L_L-C-5	Rectangular	2601+49.85	C-5	C-2	80.95	80.63	1.00	4.00	3.00	324.86	0.10	40	16.01	3.32	89.84	89.84	89.47
L_L-C-6	Rectangular	2602+49.77	C-6	C-5	81.05	80.95	1.00	4.00	3.00	99.91	0.10	36	16.01	2.99	89.84	89.84	89.39
L_L-C-7	Circular	2592+53.58	C-7	C-8	83.79	83.50	1.00	0.00	2.00	146.42	0.20	4	16.00	3.08	89.83	89.83	90.06
L_L-C-8	Circular	2594+00.00	C-8	C-9	83.00	82.73	1.00	0.00	2.50	136.58	0.20	12	16.00	4.62	89.83	89.83	90.00
L_L-C-9	Circular	2595+36.58	C-9	MH-C2	82.23	82.12	1.00	0.00	3.00	53.83	0.20	15	15.79	4.03	89.83	89.83	89.94
L_L-C-OUT	Natural	2595+83.66	C-OUT	MH-C4	79.64	79.39	1.00	0.00	8.50	250.00	0.10	230	16.00	3.08	89.83	89.83	90.32
L_L-MH-C1	Rectangular	2597+34.91	MH-C1	MH-C2	80.54	79.68	2.00	5.00	3.00	340.25	0.25	203	16.00	6.75	89.84	89.83	89.78
L_L-MH-C2	Rectangular	2595+90.41	MH-C2	C-OUT	79.68	79.64	2.00	5.00	3.00	15.54	0.25	233	16.00	7.76	89.83	89.83	89.89
L_L-MH-C3	Circular	2597+59.87	MH-C3	MH-C1	80.65	80.54	1.00	0.00	4.50	48.14	0.23	140	16.00	8.71	89.84	89.84	90.39
Link829	**Natural**		**MH-C4**	**SYS-C-OUT**	**79.39**	**79.34**	**1.00**	**0.00**	**8.50**	**50.00**	**0.10**	**224**	**16.00**	**3.25**	**89.83**	**89.83**	**89.00**
Outfalls 13																	
L_L-D-1	Circular	2611+00.00	D-1	D-2	80.90	80.50	1.00	0.00	3.00	142.00	0.28	37	15.95	5.68	87.81	87.81	88.14
L_L-D-10	Circular	2624+00.00	D-10	D-9	80.90	80.50	1.00	0.00	2.50	143.88	0.28	11	16.00	3.77	87.79	87.79	87.16
L_L-D-11	Circular	2625+50.51	D-11	D-10	81.82	81.40	1.00	0.00	2.00	150.51	0.28	4	16.00	3.19	87.79	87.79	86.97
L_L-D-14	Circular	2620+48.98	D-14	D-20	77.88	77.60	1.00	0.00	3.50	98.98	0.28	29	16.02	2.97	87.81	87.81	87.56
L_L-D-15	Circular	2621+98.98	D-15	D-14	78.80	78.38	1.00	0.00	3.00	150.00	0.28	21	16.02	3.03	87.81	87.81	87.45
L_L-D-16	Circular	2624+29.57	D-16	D-15	79.44	78.80	1.00	0.00	3.00	230.59	0.28	19	16.02	3.21	87.81	87.81	87.18
L_L-D-17	Circular	2625+53.98	D-17	D-16	79.79	79.44	1.00	0.00	3.00	124.41	0.28	16	16.02	3.35	87.81	87.81	86.94
L_L-D-18	Circular	2627+00.00	D-18	D-17	80.70	80.29	1.00	0.00	2.50	146.02	0.28	13	16.01	4.84	87.82	87.81	86.74
L_L-D-19	Circular	2628+48.98	D-19	D-18	81.62	81.20	1.00	0.00	2.00	148.98	0.28	6	16.00	3.83	87.82	87.82	86.75
L_L-D-2	Circular	2612+42.02	D-2	D-4	80.50	79.75	1.00	0.00	3.00	267.92	0.28	41	15.91	6.86	87.81	87.81	88.15
L_L-D-20	Circular	2619+50.00	D-20	D-OUT2	77.60	77.41	1.00	0.00	3.50	66.33	0.28	33	16.01	3.37	87.81	87.81	87.64
L_L-D-21	Circular	2617+44.52	D-21	D-OUT1	78.56	78.49	1.00	0.00	3.00	27.69	0.28	25	16.00	4.13	87.78	87.78	87.72
L_L-D-29	Circular	2604+78.44	D-29	D-30	83.09	82.58	1.00	0.00	2.00	256.26	0.20	5	16.01	3.34	87.78	87.78	89.22
L_L-D-3	Circular	2609+49.96	D-3	D-1	82.32	81.90	1.00	0.00	2.00	150.03	0.28	4	15.92	2.08	87.81	87.81	88.40
L_L-D-30	Circular	2607+34.69	D-30	D-31	82.08	81.85	1.00	0.00	2.50	115.32	0.20	11	16.01	4.15	87.78	87.78	88.79
L_L-D-31	Circular	2608+50.00	D-31	D-32	81.35	81.13	1.00	0.00	3.00	110.09	0.20	17	16.01	3.70	87.78	87.78	88.58
L_L-D-32	Circular	2609+60.08	D-32	D-34	81.13	80.34	1.00	0.00	3.00	395.97	0.20	21	16.02	4.80	87.78	87.78	88.38
L_L-D-34	Circular	2613+56.03	D-34	D-35	79.84	79.55	1.00	0.00	3.50	143.98	0.20	31	16.02	4.69	87.78	87.78	88.15
L_L-D-35	Circular	2615+00.00	D-35	D-OUT1	79.55	79.12	1.00	0.00	3.50	217.32	0.20	34	16.01	5.45	87.78	87.78	88.15
L_L-D-4	Circular	2615+10.01	D-4	D-5	79.25	78.86	1.00	0.00	3.50	139.63	0.28	46	16.02	5.60	87.81	87.81	88.15
L_L-D-5	Circular	2616+49.66	D-5	D-6	78.86	78.64	1.00	0.00	3.50	80.34	0.28	47	16.00	5.54	87.81	87.81	88.09
L_L-D-6	Circular	2617+30.00	D-6	D-OUT2	78.64	78.21	1.00	0.00	3.50	153.67	0.28	49	16.01	5.58	87.81	87.81	88.00
L_L-D-7	Circular	2618+00.00	D-7	D-21	78.72	78.56	1.00	0.00	3.00	55.50	0.28	24	16.01	3.98	87.78	87.78	87.66
L_L-D-8	Circular	2619+75.98	D-8	D-7	79.21	78.72	1.00	0.00	3.00	175.98	0.28	21	16.01	3.97	87.78	87.78	87.36
L_L-D-9	Circular	2622+56.12	D-9	D-8	80.50	79.71	1.00	0.00	2.50	280.37	0.28	15	15.95	4.82	87.79	87.78	87.36
L_L-D-OUT1	Rectangular	2617+16.86	D-OUT1	MH-D1	71.77	71.66	1.00	8.00	12.00	100.00	0.11	587	16.26	7.06	87.78	87.78	88.01
Link837	Rectangular	2618+83.67	D-OUT2	D-OUT1	72.11	71.77	1.00	8.00	12.00	345.00	0.10	553	16.43	6.37	87.81	87.78	87.71
L_L-MH-D1	**Rectangular**		**MH-D1**	**SYS-D-OUT**	**71.66**	**70.96**	**1.00**	**8.00**	**12.00**	**160.00**	**0.44**	**585**	**16.25**	**6.84**	**87.78**	**87.76**	**88.00**
L_L-MH-D2	Rectangular		MH-D2	D-OUT2	72.26	72.11	1.00	8.00	12.00	150.00	0.10	512	16.50	5.69	87.82	87.81	88.04
Outfalls 14																	
L_L-E-1	Circular	2631+00.00	E-1	E-2	80.10	80.01	1.00	0.00	3.00	95.10	0.10	12	16.00	2.27	83.98	83.98	86.12
L_L-E-10	Rectangular	2642+20.00	E-10	MH-E1	78.98	78.90	1.00	5.00	3.00	82.68	0.10	38	16.02	2.73	83.95	83.94	86.40
L_L-E-11	Rectangular	2643+45.40	E-11	MH-E1	78.90	78.85	1.00	4.00	3.00	42.71	0.10	32	16.00	2.79	83.95	83.94	85.96

Table 16.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (10-Year) - Outfalls 9-16

7/12/2011

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_L-E-12	Rectangular	2644+95.43	E-12	E-18	79.05	78.95	1.00	4.00	3.00	95.44	0.10	25	16.02	2.26	83.95	83.95	86.10
L_L-E-13	Rectangular	2646+45.31	E-13	E-12	79.20	79.05	1.00	4.00	3.00	149.88	0.10	21	16.02	1.99	83.96	83.95	86.63
L_L-E-14	Rectangular	2649+20.31	E-14	E-13	79.47	79.20	1.00	3.00	3.00	275.00	0.10	17	16.02	2.29	83.96	83.96	86.75
L_L-E-15	Circular	2650+70.31	E-15	E-14	79.62	79.47	1.00	0.00	3.00	150.00	0.10	14	16.01	2.36	83.97	83.96	86.22
L_L-E-16	Circular	2652+00.00	E-16	E-15	79.75	79.62	1.00	0.00	3.00	129.69	0.10	11	16.00	1.82	83.97	83.97	85.77
L_L-E-17	Circular	2653+17.02	E-17	E-16	80.87	80.75	1.00	0.00	2.00	117.02	0.10	5	16.00	2.75	83.98	83.97	86.18
L_L-E-18	Rectangular	2644+00.00	E-18	E-11	78.95	78.90	1.00	4.00	3.00	54.60	0.10	29	16.02	2.55	83.95	83.95	85.77
L_L-E-2	Rectangular	2631+95.10	E-2	E-6	80.01	79.58	1.00	3.00	3.00	421.71	0.10	17	16.01	2.54	83.98	83.97	86.45
L_L-E-20	Circular	2632+48.98	E-20	E-21	81.48	81.33	1.00	0.00	2.00	150.00	0.10	4	16.00	1.87	84.33	84.18	87.11
L_L-E-21	Rectangular	2633+98.98	E-21	E-22	80.33	80.23	1.00	3.00	3.00	101.02	0.10	30	15.76	4.31	84.18	84.15	86.58
Link840	Circular	2633+98.98	E-21OFF	E-21	80.85	80.83	1.00	0.00	2.50	14.00	0.10	23	15.75	6.48	84.19	84.18	86.93
L_L-E-22	Rectangular	2635+00.00	E-22	E-23	80.23	80.10	1.00	4.00	3.00	132.79	0.10	36	15.80	3.65	84.15	84.19	86.23
L_L-E-23	Rectangular	2636+32.79	E-23	E-25	80.10	79.78	1.00	4.00	3.00	319.48	0.10	40	15.81	3.95	84.19	84.29	86.70
L_L-E-25	Rectangular	2639+52.28	E-25	E-26	79.78	79.62	1.00	4.00	3.00	155.07	0.10	43	15.83	4.30	84.29	84.23	86.75
L_L-E-26	Rectangular	2641+07.35	E-26	E-27	79.62	79.53	1.00	5.00	3.00	92.65	0.10	47	15.84	3.72	84.23	84.18	86.21
L_L-E-27	Rectangular	2642+00.00	E-27	E-28	79.53	79.40	1.00	5.00	3.00	135.41	0.10	53	15.85	4.05	84.18	84.17	85.88
L_L-E-28	Rectangular	2643+35.41	E-28	MH-E1	78.39	78.10	2.00	6.00	3.00	291.35	0.10	147	16.00	4.07	84.17	83.94	86.36
L_L-E-30	Rectangular	2646+29.25	E-30	E-28	78.69	78.39	1.00	5.00	3.00	293.84	0.10	81	16.00	5.39	85.33	84.17	86.48
Link820	Rectangular	2646+29.65	E-30OFF	E-30	80.55	80.52	1.00	5.00	3.00	14.01	0.20	28	18.54	4.48	85.10	85.33	86.40
L_L-E-31	Rectangular	2647+73.98	E-31	E-30	78.83	78.69	1.00	5.00	3.00	144.74	0.10	60	16.00	4.02	84.87	85.33	85.97
L_L-E-32	Rectangular	2649+01.50	E-32	E-31	78.96	78.83	1.00	4.00	3.00	127.51	0.10	57	16.00	4.72	84.69	84.87	85.53
L_L-E-33	Rectangular	2650+00.00	E-33	E-32	79.06	78.96	1.00	4.00	3.00	98.50	0.10	54	16.00	4.45	84.71	84.69	85.18
L_L-E-34	Rectangular	2651+35.68	E-34	E-33	79.20	79.06	1.00	4.00	3.00	135.68	0.10	48	16.00	3.97	84.85	84.71	85.66
Link836	Rectangular	2651+88.37	E-34OFF	E-34	79.25	79.20	1.00	4.00	3.00	52.69	0.10	44	16.00	3.64	84.99	84.85	85.25
L_L-E-4	Circular	2628+45.31	E-4	E-5	81.35	81.23	1.00	0.00	2.00	123.29	0.10	4	16.00	2.75	84.00	83.99	87.01
L_L-E-5	Circular	2629+68.59	E-5	E-1	80.73	80.60	1.00	0.00	2.50	131.41	0.10	7	16.01	2.53	83.99	83.98	86.58
L_L-E-6	Rectangular	2636+16.81	E-6	E-7	79.58	79.40	1.00	4.00	3.00	183.19	0.10	23	16.02	2.33	83.97	83.96	86.41
L_L-E-7	Rectangular	2638+00.00	E-7	E-8	79.40	79.26	1.00	4.00	3.00	137.86	0.10	31	16.01	3.01	83.96	83.95	85.77
L_L-E-8	Rectangular	2639+37.86	E-8	E-10	79.26	78.98	1.00	5.00	3.00	282.14	0.10	35	16.03	2.62	83.95	83.95	86.25
L_L-E-OUT	Trapezoidal	2642+93.77	E-OUT	MH-E2	78.09	77.78	1.00	8.00	8.00	310.00	0.10	216	16.01	3.78	83.94	83.93	86.14
L_L-MH-E1	Rectangular	2643+02.69	MH-E1	E-OUT	78.10	78.09	2.00	6.00	3.00	16.60	0.10	216	16.01	5.99	83.94	83.94	86.11
L_L-MH-E2	**Trapezoidal**		**MH-E2**	**SYS-E-OUT**	**77.78**	**77.73**	**1.00**	**8.00**	**8.00**	**50.00**	**0.10**	**216**	**16.02**	**5.57**	**83.93**	**83.93**	**86.00**
Outfalls 15																	
L_L-F-1	Circular	2656+34.02	F-1	F-2	81.03	80.49	1.00	0.00	2.00	191.26	0.28	5	0.00	2.43	82.70	82.69	86.35
L_L-F-10	Circular	2671+45.31	F-10	F-9	76.05	75.85	1.00	0.00	3.50	200.00	0.10	30	0.00	6.47	82.68	82.68	83.92
L_L-F-11	Circular	2673+00.00	F-11	F-10	76.20	76.05	1.00	0.00	3.50	154.69	0.10	27	0.00	3.16	82.68	82.68	83.22
L_L-F-12	Circular	2675+50.00	F-12	F-11	76.45	76.20	1.00	0.00	3.50	250.00	0.10	22	0.00	2.85	82.68	82.68	82.97
L_L-F-13	Circular	2676+37.22	F-13	F-12	77.04	76.95	1.00	0.00	3.00	87.22	0.10	18	0.00	5.77	82.68	82.68	83.27
L_L-F-14	Circular	2677+74.19	F-14	F-13	77.17	77.04	1.00	0.00	3.00	136.97	0.10	16	0.00	2.64	82.68	82.68	83.75
L_L-F-15	Circular	2655+98.98	F-15	F-16	80.01	79.69	1.00	0.00	2.00	114.01	0.28	10	0.00	5.45	82.69	82.69	85.18
L_L-F-15A	Circular	2654+48.98	F-15A	F-15	80.43	80.01	1.00	0.00	2.00	150.00	0.28	5	0.00	2.66	82.69	82.69	85.71
L_L-F-16	Circular	2657+12.99	F-16	F-17	79.19	78.95	1.00	0.00	2.50	87.01	0.28	14	0.00	3.89	82.69	82.68	84.79
L_L-F-17	Circular	2658+00.00	F-17	F-18	78.95	78.59	1.00	0.00	2.50	127.69	0.28	21	0.00	6.49	82.68	82.68	84.48
L_L-F-18	Circular	2659+27.69	F-18	F-20	78.09	77.15	1.00	0.00	3.00	335.94	0.28	35	15.80	5.46	82.68	82.68	84.93
L_L-F-2	Circular	2658+25.28	F-2	F-4	80.49	80.00	1.00	0.00	2.00	174.72	0.28	11	0.00	5.62	82.69	82.69	85.68
L_L-F-20	Rectangular	2662+63.62	F-20	F-6	74.85	74.28	2.00	7.00	4.00	285.09	0.20	640	0.00	8.14	82.68	82.68	84.96
L_L-F-25	Rectangular	2664+00.00	F-25	F-20	75.12	74.85	2.00	7.00	4.00	136.38	0.20	610	0.00	7.47	82.69	82.68	84.48
L_L-F-26	Circular	2664+99.15	F-26	F-25	75.95	75.75	1.00	0.00	3.50	99.15	0.20	34	0.00	6.12	82.69	82.69	84.83
L_L-F-28	Circular	2668+73.98	F-28	F-26	77.20	76.45	1.00	0.00	3.00	374.84	0.20	30	0.00	6.83	82.69	82.69	84.66
L_L-F-29	Circular	2670+00.00	F-29	F-28	77.45	77.20	1.00	0.00	3.00	126.02	0.20	18	0.00	3.45	82.69	82.69	84.03
L_L-F-3	Circular	2679+54.57	F-3	F-14	78.35	78.17	1.00	0.00	2.00	180.37	0.10	5	0.00	4.32	82.68	82.68	84.39
L_L-F-31	Circular	2672+50.00	F-31	F-29	78.45	77.95	1.00	0.00	2.50	250.00	0.20	15	0.00	5.73	82.69	82.69	83.95
L_L-F-32	Circular	2673+14.70	F-32	F-31	79.08	78.95	1.00	0.00	2.00	64.70	0.20	9	0.00	5.28	82.69	82.69	84.18
L_L-F-33	Circular	2674+48.75	F-33	F-32	79.35	79.08	1.00	0.00	2.00	134.05	0.20	8	16.01	2.84	82.77	82.69	84.65
L_L-F-4	Circular	2660+00.00	F-4	F-5	79.50	79.26	1.00	0.00	2.50	84.38	0.28	19	0.00	6.41	82.69	82.69	85.07
L_L-F-5	Circular	2660+84.38	F-5	F-6	78.76	78.18	1.00	0.00	3.00	207.07	0.28	25	0.00	6.45	82.69	82.68	85.36
L_L-F-6	Rectangular	2662+91.44	F-6	F-OUT	74.28	74.25	2.00	8.00	4.00	14.01	0.20	723	0.00	11.86	82.68	82.68	86.09
L_L-F-7	Circular	2666+45.31	F-7	F-6	75.05	74.69	1.00	0.00	4.00	353.87	0.10	45	0.00	3.06	82.68	82.68	86.17
L_L-F-8	Circular	2667+95.31	F-8	F-7	75.20	75.05	1.00	0.00	4.00	150.00	0.10	42	0.00	3.48	82.68	82.68	85.49
L_L-F-9	Circular	2669+45.31	F-9	F-8	75.35	75.20	1.00	0.00	4.00	150.00	0.10	38	0.00	3.60	82.68	82.68	84.82

Table 16.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (10-Year) - Outfalls 9-16

7/12/2011

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
L_L-F-OUT	Natural	2662+90.99	F-OUT	MH-F2	74.25	74.12	1.00	0.00	0.00	44.00	0.29	655	0.00	17.70	82.68	82.68	86.76
L_L-MH-F1	Circular	2664+30.30	MH-F1	F-25	75.22	75.12	1.00	0.00	4.00	49.95	0.20	385	16.00	30.42	85.27	82.69	85.49
L_L-MH-F2	**Natural**		**MH-F2**	**SYS-F-OUT**	**74.12**	**73.69**	**1.00**	**0.00**	**0.00**	**855.00**	**0.05**	**516**	**16.02**	**4.80**	**82.68**	**82.68**	**86.65**
Outfalls 16																	
L_L-G-10	Circular	2690+74.51	G-10	G-9	75.76	75.55	1.00	0.00	3.00	74.51	0.28	33	16.03	5.64	81.55	81.55	81.96
L_L-G-12	Circular	2692+70.23	G-12	G-10	76.81	76.26	1.00	0.00	2.50	195.72	0.28	20	16.01	5.05	81.55	81.55	82.94
L_L-G-13	Circular	2694+75.10	G-13	G-12	77.88	77.31	1.00	0.00	2.00	204.87	0.28	9	16.01	4.05	81.55	81.55	83.96
L_L-G-15	Circular	2677+73.93	G-15	G-16	78.05	77.70	1.00	0.00	2.50	126.07	0.28	13	15.91	4.86	81.55	81.55	84.05
L_L-G-16	Circular	2679+00.00	G-16	G-18	77.20	76.94	1.00	0.00	3.00	91.51	0.28	25	15.86	6.10	81.55	81.55	83.23
L_L-G-18	Circular	2679+91.51	G-18	G-19	76.44	75.30	1.00	0.00	3.50	407.47	0.28	36	16.06	5.52	81.55	81.55	83.55
L_L-G-19	Circular	2683+98.98	G-19	G-20	75.30	74.88	1.00	0.00	3.50	149.85	0.28	47	16.06	6.95	81.55	81.55	83.28
L_L-G-20	Circular	2685+48.84	G-20	G-21	74.33	73.78	1.00	0.00	4.00	199.30	0.28	56	16.07	5.73	81.55	81.55	82.53
L_L-G-21	Circular	2687+48.14	G-21	G-22	73.78	73.60	1.00	0.00	4.00	61.86	0.28	64	16.06	6.43	81.55	81.55	81.84
L_L-G-22	Circular	2688+10.00	G-22	MH-G2	73.60	73.20	1.00	0.00	4.00	142.87	0.28	71	16.05	7.10	81.55	81.55	81.81
L_L-G-23	Circular	2690+00.00	G-23	MH-G2	74.95	74.82	1.00	0.00	3.00	47.42	0.28	26	16.02	5.67	81.55	81.55	81.74
L_L-G-24	Circular	2690+48.98	G-24	G-23	75.59	75.45	1.00	0.00	2.50	48.98	0.28	20	16.03	5.60	81.55	81.55	81.71
L_L-G-25	Circular	2691+73.98	G-25	G-24	75.94	75.59	1.00	0.00	2.50	125.00	0.28	16	16.08	4.12	81.55	81.55	81.86
L_L-G-26	Circular	2692+78.98	G-26	G-25	76.73	76.44	1.00	0.00	2.00	105.00	0.28	6	16.02	3.79	81.55	81.55	82.39
L_L-G-3	Circular	2682+20.31	G-3	G-4	78.11	77.62	1.00	0.00	2.00	175.00	0.28	3	16.00	2.14	81.55	81.55	84.29
L_L-G-4	Circular	2683+95.31	G-4	G-5	77.62	77.27	1.00	0.00	2.00	125.00	0.28	7	16.01	4.40	81.55	81.55	83.42
L_L-G-5	Circular	2685+20.31	G-5	G-6	76.77	76.49	1.00	0.00	2.50	100.00	0.28	10	16.00	3.73	81.55	81.55	82.79
L_L-G-6	Circular	2686+20.31	G-6	G-7	76.49	76.15	1.00	0.00	2.50	119.69	0.28	13	16.00	4.18	81.55	81.55	82.29
L_L-G-7	Circular	2687+40.00	G-7	MH-G1	76.15	75.70	1.00	0.00	2.50	159.59	0.28	16	15.94	5.33	81.55	81.55	81.83
L_L-G-8	Circular	2689+41.39	G-8	MH-G1	75.39	75.27	1.00	0.00	3.00	41.81	0.28	41	16.03	7.46	81.55	81.55	81.88
L_L-G-9	Circular	2690+00.00	G-9	G-8	75.55	75.39	1.00	0.00	3.00	58.61	0.28	39	16.03	6.81	81.55	81.55	81.73
L_L-G-OUT	Circular	2688+03.42	G-OUT	MH-G3	69.57	69.27	1.00	0.00	6.00	477.00	0.06	152	16.03	5.15	81.54	81.54	82.02
L_L-MH-G1	Circular	2688+99.59	MH-G1	G-OUT	71.39	70.07	1.00	0.00	5.50	415.94	0.32	152	16.03	6.17	81.55	81.54	82.09
L_L-MH-G2	Circular	2689+52.80	MH-G2	MH-G1	72.70	71.86	1.00	0.00	4.50	300.58	0.28	97	16.05	6.39	81.55	81.55	81.76
L_L-MH-G3	Circular		MH-G3	MH-G4	68.77	68.51	1.00	0.00	6.50	518.00	0.05	314	16.02	9.45	81.54	81.53	82.92
L_L-MH-G4	Circular		MH-G4	MH-G5	68.51	68.21	1.00	0.00	6.50	230.00	0.13	312	16.04	10.46	81.53	81.52	82.82
L_L-MH-G5	**Circular**		**MH-G5**	**SYS-G-OUT**	**68.21**	**68.11**	**1.00**	**0.00**	**6.50**	**100.00**	**0.10**	**311**	**16.04**	**11.46**	**81.52**	**81.52**	**81.62**

Table 17.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (10-Year) - Outfalls 17-19

Model: US290_SegA_Sys_BNGLHOL_Prp10-9-03-09.xp

9/8/2009

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 17-19																	
L_L-A-1	Circular		A-1	A-2	74.88	74.49	1	0.00	3.50	388.61	0.10	34	17.27	3.50	82.95	82.61	82.75
L_L-J-A-10	Circular	2708+59.50	A-10	J-A-10	74.08	73.57	1	0.00	4.50	342.60	0.15	79	16.00	4.95	82.36	82.30	81.93
E11504_1	**Rectangular**		**A102**	**E11504.1**	**71.38**	**70.92**	**1**	**8.00**	**5.00**	**221.00**	**0.21**	**415**	**16.00**	**10.35**	**81.88**	**81.65**	**80.50**
L-A102	Rectangular	2713+84.74	A-11	A102	71.81	71.38	1	8.00	5.00	395.00	0.11	401	16.00	9.98	82.26	81.88	82.19
L_L-A-11A	Circular	2715+00.00	A-12	A-11	74.16	74.04	1	0.00	4.00	115.27	0.10	64	16.01	5.09	82.28	82.26	81.79
L_L-J-A-12	Circular	2720+87.18	A-13	J-A-12	75.24	74.92	1	0.00	3.50	318.80	0.10	30	16.01	3.14	82.30	82.28	81.84
L-A-2	Rectangular	2705+49.95	A-2	J-A-2	74.00	73.65	1	4.00	4.00	346.60	0.10	71	15.89	4.41	82.61	82.52	81.67
L_L-A-3	Rectangular	2712+00.00	A-3	J-A-5	73.35	73.14	1	6.00	4.00	211.25	0.10	116	16.01	4.82	82.45	82.42	81.67
L_L-A-5	Circular	2718+00.00	A-5	J-A-5	74.78	74.00	1	0.00	3.00	388.75	0.20	32	15.92	4.49	82.48	82.42	81.67
L_L-A-8	Circular	2697+00.00	A-8	J-A-8	75.80	75.41	1	0.00	3.00	256.78	0.15	26	15.77	3.69	82.96	82.71	81.79
L_L-J-A-9	Circular	2702+68.87	A-9	J-A-9	74.78	74.43	1	0.00	4.00	351.34	0.10	51	15.77	4.01	82.51	82.41	81.90
L_L-B-1	Circular	2725+00.00	B-1	J-B-2	73.54	73.24	1	0.00	4.00	303.54	0.10	30	15.76	2.40	82.07	82.05	81.67
L_L-B-2	Circular	2731+96.88	B-2	J-B-3	72.35	72.19	1	0.00	4.50	160.18	0.10	41	15.76	2.54	82.02	82.01	81.67
L_L-B-4	Circular	2735+00.00	B-4	J-B-3	73.15	72.79	1	0.00	3.00	142.94	0.25	18	15.82	2.53	82.01	82.01	81.17
L_L-B-6	Rectangular	2733+23.85	B-6	B-7	71.91	71.74	1	8.00	4.00	171.43	0.10	158	15.84	4.90	81.92	81.86	81.47
Link322	Rectangular	2732+02.81	B-7	MHI-108	70.88	70.38	1	5.00	4.00	225.00	0.22	196	15.78	9.73	81.86	81.49	80.40
Link323	Circular	2730+37.82	B-7A	B-7	74.67	74.25	1	0.00	1.50	167.00	0.25	14	15.33	7.95	83.76	81.86	79.81
L_L-B-8	Circular	2729+00.29	B-8	B-7	74.02	72.38	1	0.00	2.00	327.72	0.50	17	15.71	5.24	82.36	81.86	81.67
L_L-B-9	Circular	2726+70.85	B-9	B-8	76.32	76.09	1	0.00	2.00	229.48	0.10	6	15.71	1.91	82.44	82.36	81.89
L_L-BNGL01	Circular	2753+59.67	BNGL01	BNGL02	68.04	67.96	1	0.00	4.00	63.40	0.13	88	15.76	6.93	76.81	76.60	77.83
L_L-BNGL03	Circular	2753+12.47	BNGL02	BNGL03	67.96	67.41	1	0.00	5.00	417.73	0.13	134	16.06	6.78	76.60	75.78	76.72
L-BNGL03	Circular	2755+15.41	BNGL03	MH-8	66.44	66.31	1	0.00	5.50	130.00	0.10	187	15.88	7.85	75.78	75.73	76.67
L-C-1	Circular	2743+00.00	C-1	C-2	73.43	73.30	1	0.00	3.00	132.53	0.10	11	16.18	1.54	81.60	81.59	78.51
L_L-C-2	Rectangular	2741+63.98	C-2	C-2a	73.30	73.04	1	3.00	3.00	268.46	0.10	20	15.49	2.23	81.59	81.57	78.91
L_L-C-2A	Rectangular	2738+96.03	C-2a	C-3	73.04	72.76	1	4.00	3.00	280.71	0.10	44	15.51	3.67	81.57	81.55	79.85
L-C-4A	Circular	2738+05.41	C-3	C-4a	71.37	70.86	1	0.00	4.00	340.00	0.15	47	15.51	3.70	81.55	81.52	79.26
L-C4	Circular	2736+07.66	C-4	C-4a	73.14	72.90	1	0.00	2.00	120.00	0.20	12	15.92	3.75	81.53	81.52	80.10
L-MHI-107	Circular	2735+39.56	C-4a	MHI-108	70.86	70.38	1	0.00	4.00	207.00	0.23	62	15.60	4.87	81.52	81.49	80.00
L_L-C-3	Circular	2737+00.00	C-6	C-3	75.16	75.05	1	0.00	2.00	105.93	0.10	6	15.76	2.00	81.56	81.55	80.15
L_L-J-A-5	Circular	2713+98.09	CNT-01	J-A-5	73.34	72.38	1	0.00	4.00	489.00	0.20	126	15.58	9.93	84.73	82.42	81.83
L_L-CNT-02	Circular	2733+47.73	CNT-02	J-B-3	72.19	72.18	1	0.00	4.00	4.00	0.25	99	16.06	7.82	82.08	82.01	80.50
L_L-D-2A	Circular	2749+26.77	D-1	D-2a	70.76	70.49	1	0.00	3.00	273.57	0.10	12	15.77	2.71	76.75	76.68	77.85
L_L-D-2	Circular	2755+00.00	D-2	BNGL02	70.06	69.87	1	0.00	3.00	187.92	0.10	29	16.07	4.01	76.77	76.60	76.19
L_L-BNGL02	Circular	2752+00.34	D-2a	BNGL02	69.99	69.87	1	0.00	3.50	112.13	0.10	29	15.77	2.97	76.68	76.60	76.49
L_L-D-3	Circular	2745+00.00	D-3	J-D-5	72.05	71.75	1	0.00	3.50	299.00	0.10	24	15.77	3.31	77.50	77.35	78.94
L_L-D-3A	Circular	2742+78.83	D-3a	D-3	74.66	73.55	1	0.00	2.00	221.17	0.50	7	15.77	4.37	78.30	77.50	80.05
L_L-D-5	Circular	2752+02.47	D-5	D-5A	70.76	70.04	1	0.00	3.50	287.53	0.25	48	15.77	4.93	76.53	75.78	77.98
L_L-D-5A	Circular	2754+90.00	D-5A	BNGL03	69.54	69.52	1	0.00	4.00	25.41	0.10	59	15.77	4.66	75.78	75.78	76.54
L_L-D-6	Circular	2757+47.22	D-6	J-D-6a	69.41	69.34	1	0.00	3.50	74.93	0.09	28	15.77	3.17	75.73	75.73	75.91
L_L-D-7	Circular	2759+08.16	D-7	D-6	70.07	69.91	1	0.00	3.00	160.94	0.10	15	15.77	3.29	75.74	75.73	76.47
L_L-A-11B	Circular	2712+02.10	J-A-10	A-11	73.57	73.30	1	0.00	4.50	182.63	0.15	79	16.00	4.95	82.30	82.26	82.83
L_L-A-12	Circular	2717+68.38	J-A-12	A-12	74.42	74.16	1	0.00	4.00	268.38	0.10	30	16.01	2.40	82.28	82.28	82.73
L_L-J-A-2	Rectangular	2709+00.55	J-A-2	A-3	73.65	73.35	1	4.00	4.00	299.45	0.10	71	15.89	4.41	82.52	82.45	82.38
L_L-A-11	Rectangular	2714+11.25	J-A-5	Node385	72.38	71.91	1	8.00	5.00	233.00	0.20	258	15.97	6.42	82.42	82.36	81.62
L_L-A-9	Circular	2699+56.78	J-A-8	A-9	75.42	74.95	1	0.00	3.00	312.09	0.15	26	15.77	3.69	82.71	82.51	82.69
L_L-A-10	Circular	2706+20.21	J-A-9	A-10	74.44	74.08	1	0.00	4.00	239.29	0.15	51	15.77	4.01	82.41	82.36	82.77
L_L-J-B-2	Circular	2728+03.54	J-B-2	B-2	73.24	72.85	1	0.00	4.00	393.29	0.10	30	15.76	2.40	82.05	82.02	81.67
L_L-J-B-3	Rectangular	2733+57.06	J-B-3	B-6	72.19	71.91	1	8.00	4.00	279.55	0.10	149	15.86	4.62	82.01	81.92	81.65
L_L-J-D-5	Circular	2747+99.00	J-D-5	D-5	71.76	70.75	1	0.00	3.50	403.65	0.25	38	15.77	4.66	77.35	76.53	79.99
L_L-J-D-6A	Circular	2756+73.03	J-D-6a	MH-8	69.34	69.26	1	0.00	3.50	85.37	0.09	28	15.77	3.38	75.73	75.73	76.52
MH10-11	Circular		MH-10	MH-11	65.79	65.37	1	0.00	5.50	420.00	0.10	223	15.77	9.34	75.51	75.31	76.08
MH10-11	Circular		MH-10	MH-11	70.33	68.68	1	0.00	3.00	420.00	0.39	45	15.93	6.77	75.51	75.31	76.08

Table 17.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (10-Year) - Outfalls 17-19

Model: US290_SegA_Sys_BNGLHOL_Prp10-9-03-09.xp

9/8/2009

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 17-19																	
L-MH-11	**Circular**		**MH-11**	**E11504.3**	**65.37**	**65.16**	**1**	**0.00**	**5.50**	**210.00**	**0.10**	**293**	**16.01**	**11.99**	**75.31**	**75.16**	**75.27**
L-MH-11	**Circular**		**MH-11**	**E11504.3**	**68.68**	**68.47**	**1**	**0.00**	**3.00**	**210.00**	**0.10**	**45**	**16.14**	**6.35**	**75.31**	**75.16**	**75.27**
L-MH-8	Circular	2756+19.68	MH-8	MH-9	66.31	66.13	1	0.00	5.50	180.00	0.10	190	15.88	7.96	75.73	75.66	77.12
L-MH-8	Circular	2756+19.68	MH-8	MH-9	71.42	70.94	1	0.00	2.00	49.07	0.98	25	15.76	7.84	75.73	75.66	77.12
MH9-10	Circular		MH-9	MH-10	66.13	65.79	1	0.00	5.50	340.00	0.10	223	15.77	9.37	75.66	75.51	76.20
MH9-10	Circular		MH-9	MH-10	70.94	70.33	1	0.00	3.00	340.00	0.18	46	15.77	6.30	75.66	75.51	76.20
L-MHI-108	Rectangular		MHI-108	MHI-109	70.38	69.92	1	7.00	5.00	372.00	0.12	282	15.92	8.03	81.49	81.32	80.00
E11504_2	**Rectangular**		**MHI-109**	**E11504.2**	**69.92**	**69.52**	**1**	**7.00**	**5.00**	**261.00**	**0.15**	**287**	**15.91**	**8.17**	**81.32**	**81.17**	**80.80**
Link341	Rectangular		Node385	A-11	71.91	71.81	1	8.00	5.00	49.00	0.20	258	15.97	6.42	82.36	82.26	82.19
Link339	Circular		POND4A	MHI-108	70.58	70.38	1	0.00	5.00	204.00	0.10	51	16.01	2.58	81.49	81.49	81.00
L-POND4B	Circular		POND4B	J-D-5	71.79	71.75	1	0.00	4.00	39.00	0.10	13	15.77	1.53	77.37	77.35	80.00

Table 18.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (10-Year) - Outfalls 20-22

Model: US290_SegA_Sys_BKHSEW43_Prp10-adjust-wat.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 20-22																	
E115-01.1	**Natural**	**2811+67.66**	**BRCKH01.0**	**BRCKH00.1**	**51.24**	**50.96**	**1**	**0.00**	**0.00**	**114.20**	**0.25**	**6422**	**17.88**	**9.62**	**67.82**	**67.73**	**70.00**
E115-02	Natural	2810+75.92	BRCKH01.1	BRCKH01.0	51.27	51.24	1	0.00	0.00	307.00	0.01	6242	17.89	8.23	68.89	67.82	71.00
E115-01.3	Natural		BRCKH01.3	BRCKHO1.2	51.58	51.39	1	0.00	0.00	254.70	0.07	4775	17.76	6.23	69.71	69.35	72.20
E115-03.1	Natural		BRCKHO1.2	BRCKH01.1	51.39	51.27	1	0.00	0.00	151.00	0.08	5846	17.88	7.34	69.35	68.89	72.80
L_L-COH01	Circular	2799+14.15	COH01	F-2a	62.14	61.80	1	0.00	4.00	172.06	0.20	115	16.21	12.58	68.89	68.63	68.02
Link52	Rectangular	2832+53.36	DET-4C	J-H-4a	57.20	57.09	1	6.00	5.00	110.66	0.10	265	15.77	8.78	71.19	71.04	71.50
L_L-E-1	Circular	2765+99.87	E-1	E-2	65.96	65.56	1	0.00	4.00	400.13	0.10	41	15.84	3.54	72.17	71.86	74.94
L_L-E-10	Circular	2786+12.18	E-10	E-11	62.25	62.06	1	0.00	5.00	187.82	0.10	68	15.86	6.73	69.69	69.68	72.43
L_L-E-11	**Circular**	**2788+00.00**	**E-11**	**E11504.4**	**61.63**	**61.50**	**1**	**0.00**	**5.00**	**63.67**	**0.20**	**79**	**15.86**	**7.62**	**69.68**	**69.68**	**71.27**
Link71	Natural		E11504.3	E11504.4	58.48	58.33	1	0.00	0.00	200.00	0.07	1095	17.76	6.38	69.75	69.68	75.23
Link77	Natural	2788+44.73	E11504.4	E11504.5	58.33	58.02	1	0.00	0.00	600.00	0.05	1097	17.78	6.99	69.68	69.46	75.16
Link75	Natural		E11504.5	E11504.6	58.02	58.01	1	0.00	0.00	42.50	0.02	1095	17.78	6.82	69.46	69.45	75.16
Link74	Natural		E11504.6	E11504.7	58.01	57.34	1	0.00	0.00	428.00	0.16	1096	17.94	6.89	69.45	69.40	72.62
Link73	Natural		E11504.7	E11504.8	57.34	57.23	1	0.00	0.00	63.75	0.17	1097	17.96	6.95	69.40	69.39	72.61
Link72	Natural		E11504.8	BRCKHO1.2	57.23	55.83	1	0.00	0.00	778.00	0.18	1098	17.97	6.88	69.39	69.35	73.29
L_L-E-1a	Circular	2761+99.46	E-1a	E-1	67.36	66.96	1	0.00	3.00	400.41	0.10	18	15.99	4.33	72.47	72.17	76.34
L_L-E-2	Rectangular	2770+00.00	E-2	J-E-2	65.56	65.29	1	4.00	4.00	272.32	0.10	71	15.84	5.10	71.86	71.48	74.53
L_L-E-3	Rectangular	2776+64.05	E-3	E-4	63.53	63.14	1	5.00	4.00	385.95	0.10	94	15.99	4.67	70.92	70.36	72.81
L_L-E-4	Rectangular	2780+50.00	E-4	E-4a	63.14	63.00	1	6.00	4.00	139.77	0.10	121	15.99	5.02	70.36	70.15	72.11
L_L-E-4a	Rectangular	2781+89.77	E-4a	E-5	61.59	61.38	1	7.00	5.00	210.23	0.10	243	15.99	6.91	70.15	69.75	71.86
L_L-E-5	Rectangular	2784+00.00	E-5	J-E-5	61.38	60.98	1	7.00	5.00	399.86	0.10	269	15.99	7.65	69.75	68.91	71.48
L_L-E-6	Circular	2766+67.46	E-6	E-7a	66.17	65.83	1	0.00	3.00	344.00	0.10	20	16.01	4.85	69.82	69.80	76.01
L_L-E-7	Circular	2773+53.94	E-7	E-8	64.49	64.20	1	0.00	4.00	296.06	0.10	36	0.00	5.64	69.77	69.75	74.09
L_L-E-7a	Circular	2770+11.46	E-7a	E-7	65.33	64.99	1	0.00	3.50	342.48	0.10	28	16.02	5.25	69.80	69.77	74.53
L_L-E-8	Circular	2776+50.00	E-8	E-9	63.70	63.50	1	0.00	4.50	200.00	0.10	51	15.86	4.94	69.75	69.73	72.77
L_L-E-9	Circular	2778+50.00	E-9	J-E-9	63.00	62.61	1	0.00	5.00	393.82	0.10	62	15.85	4.74	69.73	69.71	72.10
L_L-F-1	Rectangular	2794+00.00	F-1	F-2a	60.41	59.89	1	7.00	5.00	517.51	0.10	292	15.99	8.34	68.68	68.63	69.54
L_L-F-1a	Rectangular	2792+16.33	F-1a	F-1	60.57	60.39	1	7.00	5.00	183.67	0.10	280	15.99	7.97	68.69	68.68	70.24
L_L-F-2	Rectangular	2800+00.00	F-2	J-F-3	59.80	59.50	1	9.00	5.00	300.08	0.10	326	15.86	7.27	68.57	68.38	69.36
L_L-F-2a	Rectangular	2799+17.51	F-2a	F-2	59.89	59.80	1	9.00	5.00	82.49	0.12	311	15.86	6.90	68.63	68.57	69.68
Link78	Circular	2799+17.51	F-2a	J-F-5	61.80	61.21	1	0.00	4.00	295.00	0.20	138	16.52	10.97	68.63	69.22	69.68
L_L-F-3	Rectangular	2807+00.00	F-3	BRCKH01.0	59.11	58.64	1	9.00	5.00	467.66	0.10	341	15.87	8.73	68.12	67.82	69.36
L_L-F-4	Circular	2793+86.99	F-4	F-5	63.99	63.67	1	0.00	3.00	313.01	0.10	10	0.00	3.94	69.22	69.22	71.06
L_L-F-5	Circular	2797+00.00	F-5	J-F-5	62.68	62.55	1	0.00	4.00	126.23	0.10	35	0.00	7.50	69.22	69.22	69.67
L_L-F-6	Circular	2806+00.00	F-6	J-F-6	62.92	62.52	1	0.00	3.50	400.15	0.10	26	0.00	3.74	69.22	69.22	69.42
Link76	Circular	2806+00.00	F-6	BRCKH01.1	0.05	0.00	1	0.00	0.05	10.00	0.50	0	0.00	0.00	0.00	0.00	69.42
L_L-G-1	Rectangular	2825+00.00	G-1	G-1a	60.16	59.94	1	4.00	4.00	217.95	0.10	55	15.83	4.05	67.82	67.82	69.36
L_L-G-1a	Rectangular	2822+82.05	G-1a	J-G-1a	59.94	59.57	1	4.00	4.00	382.65	0.10	64	15.84	4.70	67.82	67.82	69.36
L_L-G-1b	Rectangular	2815+19.46	G-1b	BRCKH01.0	59.19	58.84	1	5.00	4.00	351.81	0.10	81	16.04	6.65	67.82	67.82	69.36
L_L-G-2	Circular	2827+50.00	G-2	G-1	60.40	60.16	1	0.00	4.00	250.34	0.10	43	15.83	3.76	67.82	67.82	69.36
L_L-G-2a	Circular	2830+56.00	G-2a	G-2	61.21	60.90	1	0.00	3.50	306.00	0.10	28	15.82	4.83	67.82	67.82	69.36
L_L-G-3	Rectangular	2845+64.61	G-3	J-G-3	59.57	59.11	1	8.00	4.00	459.93	0.10	169	15.61	5.27	71.37	71.84	69.36
L_L-H-5a	Rectangular	2838+00.00	G-3a	J-H-5	58.78	58.50	1	6.00	5.00	276.34	0.10	186	15.67	6.17	71.18	71.11	70.03
L_L-G-4	Rectangular	2849+00.00	G-4	G-3	59.90	59.57	1	8.00	4.00	331.39	0.10	158	15.60	4.92	71.45	71.37	69.36
L_L-G-5	Circular	2852+50.00	G-5	G-5a	60.74	60.59	1	0.00	3.50	146.48	0.10	35	20.04	3.59	71.48	71.48	69.36
L_L-G-5a	Circular	2851+00.00	G-5a	G-5b	60.59	60.50	1	0.00	3.50	89.16	0.10	34	20.04	3.50	71.48	71.48	69.36
L_L-G-5b	Rectangular	2850+06.84	G-5b	G-4	60.00	59.90	1	8.00	4.00	102.84	0.10	151	15.60	4.70	71.48	71.45	69.36
L_L-H-1	Rectangular	2814+00.00	H-1	BRCKH01.1	54.43	54.11	1	9.00	7.00	324.08	0.10	531	16.24	10.14	69.56	68.89	69.42
L_L-H-2	Rectangular	2824+00.00	H-2	J-H-2	55.44	55.24	1	9.00	7.00	196.75	0.10	518	16.26	8.18	70.52	70.32	69.66
L_L-H-3	Rectangular	2828+50.00	H-3	H-3b	56.71	56.55	1	6.00	5.00	162.00	0.10	297	19.57	9.82	70.93	70.88	69.36
L_L-H-3a	Rectangular	2826+30.00	H-3a	H-2	55.67	55.44	1	9.00	7.00	230.00	0.10	508	16.26	8.03	70.81	70.52	69.36
L_L-H-3b	Rectangular	2826+88.00	H-3b	H-3a	55.73	55.67	1	9.00	7.00	59.41	0.10	524	18.87	8.26	70.88	70.81	69.36
L_L-H-4a	Rectangular	2831+18.34	H-4a	H-3	56.97	56.70	1	6.00	5.00	268.30	0.10	274	15.77	9.08	71.00	70.93	69.85
L_L-H-5	Circular	2840+70.00	H-5	J-H-5	58.40	58.00	1	0.00	5.00	393.64	0.10	90	19.58	4.55	71.10	71.11	69.48
L_L-H-7	Circular	2845+70.00	H-7	J-H-7	59.39	59.19	1	0.00	4.00	198.30	0.10	59	15.63	4.65	71.10	71.10	69.36
L_L-H-8	Circular	2848+00.00	H-8	H-7	60.12	59.89	1	0.00	3.50	226.00	0.10	43	15.63	4.47	71.11	71.10	69.36

Table 18.1

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
Hydraulic Results Summary - Proposed Conditions w/o Mitigation (10-Year) - Outfalls 20-22

Model: US290_SegA_Sys_BKHSEW43_Prp10-adjust-wat.xp **9/8/2009**

Name	Link Type	Upstream Node Station (Frtg Align)	Upstream Node Name	Downstream Node Name	Upstream Invert Elevation ft	Downstream Invert Elevation ft	Number of Barrels	Conduit Span (ft)	Diameter (Height) ft	Length ft	Conduit Slope %	Max Flow cfs	Time to Peak (hours) hr	Max Velocity fps	Maximum Water Elevation (US) ft	Maximum Water Elevation (DS) ft	Elevation (Spill Crest) (US) ft
Outfalls 20-22																	
L_L-H-9	Circular	2852+94.91	H-9	H-8	60.61	60.12	1	0.00	3.50	490.91	0.10	35	20.06	3.64	71.11	71.11	68.60
L_LJ-E-2	Rectangular	2772+72.32	J-E-2	E-3	65.29	64.90	1	4.00	4.00	391.73	0.10	71	15.84	6.22	71.47	70.92	74.38
L_LJ-E-5	Rectangular	2787+99.86	J-E-5	F-1a	60.99	60.57	1	7.00	5.00	416.47	0.10	269	15.99	7.65	68.91	68.69	72.32
L_L-E-515	**Circular**	**2798+26.51**	**JE5150100**	**E5150100**	**56.59**	**56.43**	**1**	**0.00**	**4.50**	**82.00**	**0.20**	**155**	**16.37**	**10.46**	**69.92**	**70.00**	**70.39**
L_LJ-E-9	Circular	2782+43.83	J-E-9	E-10	62.61	62.24	1	0.00	5.00	368.29	0.10	62	0.00	4.75	69.71	69.69	73.27
L_LJ-F-3	Rectangular	2803+00.08	J-F-3	F-3	59.51	59.11	1	9.00	5.00	399.92	0.10	321	15.87	7.43	68.38	68.12	70.19
L_LJ-F-5	Circular	2798+26.23	J-F-5	JE5150100	56.65	56.59	1	0.00	2.50	31.40	0.20	155	16.37	31.15	69.22	69.92	70.12
L_LJ-F-6	Circular	2801+99.85	J-F-6	J-F-5	62.52	62.12	1	0.00	3.50	373.62	0.11	26	0.00	5.17	69.22	69.22	71.42
L_L-JG-1a	Rectangular	2818+99.40	J-G-1a	G-1b	59.57	59.19	1	4.00	4.00	379.94	0.10	62	15.84	4.81	67.82	67.82	70.06
L_LJ-G-3	Rectangular	2841+00.59	J-G-3	G-3a	59.11	58.81	1	8.00	4.00	296.54	0.10	170	15.61	5.29	71.88	71.18	71.58
L_LJ-G-3a	Circular	2834+13.32	J-G-3a	G-2a	62.06	61.71	1	0.00	3.00	357.48	0.10	15	15.77	4.44	67.82	67.82	70.75
L_LJ-H-1a	Rectangular	2818+06.46	J-H-1	H-1	54.84	54.43	1	9.00	7.00	406.46	0.10	518	16.26	8.19	71.02	69.56	71.96
L_LJ-H-1	Rectangular	2822+03.34	J-H-2	J-H-1	55.24	54.84	1	9.00	7.00	396.95	0.10	518	16.26	8.18	70.32	71.02	70.27
L_L-J-H-4A	Rectangular	2832+43.53	J-H-4a	H-4a	57.10	56.97	1	6.00	5.00	125.18	0.10	265	15.77	8.78	71.04	71.00	70.48
Link1	Rectangular	2835+19.36	J-H-4b	DET-4C	57.85	57.74	1	7.00	5.00	105.58	0.10	243	15.76	6.92	71.59	71.19	71.68
L_LJ-H-5	Rectangular	2836+72.36	J-H-5	J-H-4b	58.00	57.85	1	7.00	5.00	148.98	0.10	243	15.76	6.91	71.11	71.59	71.07
L_LJ-H-7	Circular	2843+67.70	J-H-7	H-5	59.19	58.90	1	0.00	4.50	293.70	0.10	60	15.63	3.78	71.10	71.10	69.36
L_L-MH-12s	Circular	2835+79.64	MH-12s	J-G-3a	62.06	61.90	1	0.00	3.00	166.32	0.10	16	15.76	3.10	67.82	67.82	70.87
L_L-MH-14s	Circular	2781+98.83	MH-14s	E-4a	63.39	63.37	1	0.00	5.00	27.75	0.09	122	15.85	8.62	70.21	70.15	71.37
L_L-MH-18s	Circular	2851+44.26	MH-18s	G-5b	62.42	61.92	1	0.00	4.00	189.11	0.27	137	15.61	10.81	71.98	71.48	68.35
L_L-MH-7s	Circular	2828+96.25	MH-7s	H-3b	56.11	55.73	1	0.00	7.00	364.99	0.10	429	18.90	11.06	72.30	70.88	71.63
L_L-W43rd	Circular	2783+29.32	W43rd	MH-14s	63.74	63.39	1	0.00	5.00	173.87	0.20	122	16.01	7.90	70.59	70.21	72.57

Table 19.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
E117-00-00 Watershed-FEMA Effective TC&R Calculations

Subwatershed	Drainage Area (acres)	Drainage Area (sq.mi.)	Watershed Length (mi.) L	Length to Centroid(mi.) Lca	Channel Slope(ft./mi) S	Overland Slope(ft./mi.) So	D	Percent Urban Development 2002 DLU	Percent Channel Improvement DCI	Percent Channel Conveyance DCC	Percent Ponding DPP	DLU affected by Detention DET	Percent Impervious 2002	(TC+R)''	TC''	R''	DLU Minimum	DLU *(Detention)*
E117A	3344.8	5.23	4.89	2.15	3.90	8.10	2.46	64.00	91	80	0	21.80	32.30	9.30	1.42	7.88	24.06	42.20
E117B	1707.5	2.67	2.84	1.20	4.82	10.40	2.46	70.90	67	80	0	13.24	36.50	4.76	0.78	3.98	24.06	57.66
E117C	1125.9	1.76	2.64	1.08	5.50	7.90	2.46	75.70	58	100	0	9.01	34.60	3.15	0.68	2.48	17.59	66.69

Table 20.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
E117-00-00 Watershed-Revised Existing TC&R Calculations

Subwatershed	Drainage Area (acres)	Drainage Area (sq.mi.)	Watershed Length (mi.) L	Length to Centroid(mi.) Lca	Channel Slope(ft./mi) S	Overland Slope(ft./mi.) So	D	Percent Urban Development 2002 DLU	Percent Channel Improvement DCI	Percent Channel Conveyance DCC	Percent Ponding DPP	DLU affected by Detention DET	Percent Impervious 2002	(TC+R)''	TC''	R''	DLU Minimum	DLU *(Detention)*
E117A1	1447.9	2.26	2.46	0.84	3.90	8.10	2.46	64.00	91	80	0	21.87	32.35	5.74	0.52	5.21	24.06	42.13
E117A2	1056.0	1.65	2.15	0.76	3.90	8.10	2.46	64.00	91	80	0	22.26	32.60	5.25	0.47	4.78	24.06	41.74
E117A3	841.8	1.32	2.01	0.92	3.90	8.10	2.46	64.00	91	80	0	21.80	32.30	4.97	0.58	4.39	24.06	42.20
E117B	1707.5	2.67	2.84	1.20	4.82	10.40	2.46	70.90	67	80	0	13.24	36.50	4.76	0.78	3.98	24.06	57.66
E117C	1125.9	1.76	2.64	1.08	5.50	7.90	2.46	75.70	58	100	0	9.01	34.60	3.15	0.68	2.48	17.59	66.69

Table 21.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
E117-00-00 Watershed-FEMA Effective vs. Revised Existing Flow Comparison

HEC-HMS Node	HEC-RAS Station	FEMA Effective Flows (cfs)			Revised Existing Flows (cfs)			Benefits (-)/Impacts (+) (cfs)		
		10%	2%	1%	10%	2%	1%	10%	2%	1%
E1170000_0001_J	922.4	3,676	5,527	6,496	3,870	5,562	6,397	194	36	-99
	1628.1	3,590	5,400	6,340	3,780	5,430	6,240	190	30	-100
	2832.2	3,520	5,300	6,220	3,720	5,330	6,120	200	30	-100
	3916.7	3,410	5,130	6,030	3,610	5,170	5,930	200	40	-100
	5648.3	3,320	4,990	5,860	3,520	5,030	5,760	200	40	-100
	6348.5	3,170	4,770	5,600	3,380	4,810	5,500	210	40	-100
	7607.8	3,110	4,680	5,490	3,320	4,720	5,390	210	40	-100
	8306.2	3,010	4,530	5,310	3,220	4,570	5,210	210	40	-100
	10057.6	2,960	4,450	5,220	3,170	4,490	5,120	210	40	-100
E1170000_0096_J	11089.8	2,823	4,253	4,982	3,036	4,289	4,883	213	36	-99
	12154.7	2,660	4,010	4,710	2,900	4,070	4,640	240	60	-70
	13574.7	2,500	3,770	4,450	2,760	3,850	4,400	260	80	-50
	14685.2	2,300	3,480	4,120	2,590	3,580	4,100	290	100	-20
	15784.9	2,150	3,270	3,890	2,460	3,380	3,880	310	110	-10
	16769.7	2,020	3,070	3,660	2,340	3,200	3,670	320	130	10
	17824.0	1,910	2,900	3,470	2,240	3,040	3,500	330	140	30
	18672.3	1,790	2,730	3,280	2,130	2,880	3,320	340	150	40
	19343.5	1,710	2,600	3,140	2,050	2,760	3,180	340	160	40
E1170000_0193_J	20304.1	1,642	2,503	3,025	1,988	2,665	3,078	346	162	54
	21277.8	1,540	2,380	2,860	1,910	2,630	3,070	370	250	210
	22221.8	1,440	2,250	2,710	1,840	2,600	3,050	400	350	340
	22975.8	1,350	2,140	2,560	1,770	2,570	3,040	420	430	480
	24073.9	1,280	2,050	2,450	1,720	2,550	3,030	440	500	580
	24961.1	1,190	1,930	2,300	1,640	2,510	3,020	450	580	720
E1170000_0254_J	25935.0	1,120	1,840	2,190	1,586	2,483	3,004	466	643	814
	27262.8	1,050	1,750	2,070	1,340	2,270	2,800	290	520	730
	29085.6	960	1,600	1,800	1,064	1,583	1,868	104	-17	68
	29930.0	910	1,510	1,720	1,040	1,540	1,810	130	30	90
	32580.0	840	1,380	1,580	1,000	1,480	1,730	160	100	150
	32602.0	--	--	--	980	1,440	1,680	--	--	--
E1170000_0326_J	32752.1	800	1,310	1,510	977	1,444	1,680	177	134	170
	32919.6	790	1,300	1,500	870	1,310	1,500	80	10	0
	33670.1	770	1,260	1,460	850	1,280	1,470	80	20	10
	34321.4	690	1,110	1,280	770	1,160	1,330	80	50	50
	35311.5	630	990	1,150	710	1,060	1,230	80	70	80
	35996.1	550	830	970	620	925	1,080	70	95	110

Table 22.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
E117-00-00 Watershed-FEMA Effective vs. Revised Existing Water Surface Elevation Comparisor

Stream ID	Station	FEMA Effective WSEL (ft)			Revised Existing WSEL (ft)			Benefits(-)/Impacts(+) (ft)		
		10%	2%	1%	10%	2%	1%	10%	2%	1%
E117-00-00	36002	98.60	99.53	99.65	99.18	99.60	101.32	0.58	0.07	1.67
E117-00-00	35901	98.55	99.47	99.58	99.14	99.53	96.33	0.59	0.06	-3.25
E117-00-00	35811	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert
E117-00-00	35718	96.32	97.82	98.29	96.72	98.09	98.45	0.40	0.27	0.16
E117-00-00	35566	96.31	97.81	98.29	96.72	98.09	98.45	0.41	0.28	0.16
E117-00-00	35315	96.24	97.73	98.19	96.65	98.00	98.35	0.41	0.27	0.16
E117-00-00	34437	96.18	97.67	98.13	96.59	97.94	98.29	0.41	0.27	0.16
E117-00-00	34311	95.93	97.54	97.99	96.29	97.81	98.27	0.36	0.27	0.28
E117-00-00	34267	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert
E117-00-00	34221	95.75	97.55	98.01	96.06	97.83	98.28	0.31	0.28	0.27
E117-00-00	33907	95.79	97.57	98.04	96.10	97.85	98.27	0.31	0.28	0.23
E117-00-00	33675	95.75	97.53	98.00	96.06	97.82	98.25	0.31	0.29	0.25
E117-00-00	32920	95.68	97.49	97.97	95.99	97.79	98.24	0.31	0.30	0.27
E117-00-00	32902	95.55	97.50	97.97	95.92	97.79	98.24	0.37	0.29	0.27
E117-00-00	32836	94.74	97.24	97.87	95.06	97.68	98.19	0.32	0.44	0.32
E117-00-00	32825.5	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	32811	93.45	97.12	97.83	94.64	97.64	98.15	1.19	0.52	0.32
E117-00-00	32762	93.42	97.21	97.86	94.53	97.67	98.16	1.11	0.46	0.30
E117-00-00	32747.5	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	32734	92.42	96.63	97.20	94.09	97.04	97.37	1.67	0.41	0.17
E117-00-00	32700	92.53	96.30	97.20	94.17	97.04	97.37	1.64	0.74	0.17
E117-00-00	32652	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert
E117-00-00	32602	92.41	95.48	96.08	93.85	95.83	96.41	1.44	0.35	0.33
E117-00-00	32588	92.39	95.32	95.95	93.83	95.65	96.26	1.44	0.33	0.31
E117-00-00	31272	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert
E117-00-00	29956	91.82	93.64	93.84	92.97	93.76	94.03	1.15	0.12	0.19
E117-00-00	29929	91.82	93.63	93.84	92.95	93.75	94.01	1.13	0.12	0.17
E117-00-00	29890.5	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	29852	91.79	93.59	93.78	92.91	93.70	93.96	1.12	0.11	0.18
E117-00-00	29805	91.78	93.58	93.77	92.92	93.70	93.97	1.14	0.12	0.20
E117-00-00	29680	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	29551	91.76	93.57	93.75	92.81	93.62	93.90	1.05	0.05	0.15
E117-00-00	29500	91.73	93.51	93.68	92.78	93.60	93.88	1.05	0.09	0.20
E117-00-00	29462	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	29416	91.73	93.45	93.67	92.76	93.54	93.84	1.03	0.09	0.17
E117-00-00	29325	--	--	--	92.74	93.53	93.82	--	--	--
E117-00-00	29185	--	--	--	92.73	93.51	93.80	--	--	--
E117-00-00	29088	91.68	93.38	93.59	92.72	93.49	93.77	1.04	0.11	0.18
E117-00-00	28999.5	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert
E117-00-00	28897	91.65	93.36	93.57	92.70	93.46	93.74	1.05	0.10	0.17
E117-00-00	28800	--	--	--	92.67	93.45	93.74	--	--	--
E117-00-00	28684	91.56	93.26	93.47	92.60	93.36	93.63	1.04	0.10	0.16
E117-00-00	28302	91.37	93.05	93.24	92.46	93.17	93.41	1.09	0.12	0.17
E117-00-00	27886	91.25	92.89	93.06	92.38	93.02	93.24	1.13	0.13	0.18
E117-00-00	27836	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert
E117-00-00	27778	89.93	91.58	92.00	90.99	92.21	92.68	1.06	0.63	0.68
E117-00-00	27568	89.86	91.47	91.87	90.93	92.12	92.58	1.07	0.65	0.71
E117-00-00	27267	89.67	91.21	91.59	90.72	91.79	92.21	1.05	0.58	0.62
E117-00-00	25938	88.94	90.46	90.82	89.93	90.93	91.27	0.99	0.47	0.45
E117-00-00	24962	88.35	90.12	90.48	89.48	90.54	90.85	1.13	0.42	0.37
E117-00-00	24075	87.60	89.54	89.98	88.70	90.00	90.34	1.10	0.46	0.36
E117-00-00	23347	86.71	88.55	89.11	87.63	88.87	89.33	0.92	0.32	0.22
E117-00-00	22996	86.69	88.57	89.09	87.64	88.89	89.29	0.95	0.32	0.20
E117-00-00	22931	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	22854	86.58	88.26	88.65	87.43	88.51	88.81	0.85	0.25	0.16

Table 22.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
E117-00-00 Watershed-FEMA Effective vs. Revised Existing Water Surface Elevation Comparisor

Stream ID	Station	FEMA Effective WSEL (ft)			Revised Existing WSEL (ft)			Benefits(-)/Impacts(+) (ft)		
		10%	2%	1%	10%	2%	1%	10%	2%	1%
E117-00-00	22615	86.36	88.06	88.51	87.19	88.29	88.63	0.83	0.23	0.12
E117-00-00	22223	86.13	87.92	88.38	86.95	88.13	88.48	0.82	0.21	0.10
E117-00-00	21280	85.26	87.31	87.90	86.07	87.52	87.95	0.81	0.21	0.05
E117-00-00	20308	83.55	85.90	86.95	84.28	86.16	86.98	0.73	0.26	0.03
E117-00-00	19566	82.97	85.38	86.42	83.64	85.62	86.43	0.67	0.24	0.01
E117-00-00	19349	82.81	85.24	86.29	83.47	85.48	86.30	0.66	0.24	0.01
E117-00-00	19322	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	19290	82.71	85.08	85.99	83.36	85.28	85.99	0.65	0.20	0.00
E117-00-00	19077	82.55	84.92	85.81	83.18	85.12	85.81	0.63	0.20	0.00
E117-00-00	18678	82.34	84.73	85.61	82.95	84.93	85.60	0.61	0.20	-0.01
E117-00-00	17828	81.86	84.32	85.17	82.43	84.50	85.15	0.57	0.18	-0.02
E117-00-00	17658	81.83	84.29	85.16	82.40	84.46	85.13	0.57	0.17	-0.03
E117-00-00	17630	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	17597	81.76	84.17	85.06	82.32	84.33	85.04	0.56	0.16	-0.02
E117-00-00	17414	81.66	84.09	84.94	82.21	84.24	84.91	0.55	0.15	-0.03
E117-00-00	16773	81.33	83.79	84.63	81.85	83.93	84.59	0.52	0.14	-0.04
E117-00-00	16140	81.01	83.56	84.41	81.51	83.70	84.37	0.50	0.14	-0.04
E117-00-00	15781	80.88	83.44	84.31	81.37	83.58	84.26	0.49	0.14	-0.05
E117-00-00	15698	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	15619	80.79	83.17	83.93	81.26	83.29	83.89	0.47	0.12	-0.04
E117-00-00	15364	80.72	83.12	83.89	81.18	83.24	83.85	0.46	0.12	-0.04
E117-00-00	15001	80.63	83.06	83.84	81.09	83.18	83.80	0.46	0.12	-0.04
E117-00-00	14709	80.54	82.99	83.79	80.99	83.11	83.75	0.45	0.12	-0.04
E117-00-00	14698.5	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	14681	80.50	82.95	83.74	80.96	83.07	83.70	0.46	0.12	-0.04
E117-00-00	14156	80.17	82.58	83.47	80.59	82.68	83.42	0.42	0.10	-0.05
E117-00-00	14121.5	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	14083	80.08	82.40	83.25	80.49	82.48	83.18	0.41	0.08	-0.07
E117-00-00	13877	79.87	82.20	83.14	80.24	82.29	83.06	0.37	0.09	-0.08
E117-00-00	13580	79.62	82.01	83.02	79.98	82.10	82.93	0.36	0.09	-0.09
E117-00-00	12476	78.83	81.55	82.72	79.15	81.66	82.61	0.32	0.11	-0.11
E117-00-00	12164	78.30	81.20	82.60	78.58	81.32	82.48	0.28	0.12	-0.12
E117-00-00	12151	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	12138	78.26	81.04	82.39	78.53	81.13	82.26	0.27	0.09	-0.13
E117-00-00	11757	77.95	80.78	82.19	78.20	80.86	82.05	0.25	0.08	-0.14
E117-00-00	11096	77.37	80.24	81.77	77.58	80.32	81.61	0.21	0.08	-0.16
E117-00-00	10371	77.07	80.02	81.60	77.25	80.10	81.44	0.18	0.08	-0.16
E117-00-00	10050	76.83	79.81	81.45	76.99	79.90	81.29	0.16	0.09	-0.16
E117-00-00	9975	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	9902	76.50	79.66	81.08	76.65	79.74	80.93	0.15	0.08	-0.15
E117-00-00	9794	76.20	79.36	80.74	76.31	79.43	80.60	0.11	0.07	-0.14
E117-00-00	9694	76.17	79.33	80.72	76.27	79.40	80.59	0.10	0.07	-0.13
E117-00-00	9592	76.14	79.30	80.71	76.23	79.37	80.57	0.09	0.07	-0.14
E117-00-00	9569.5	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	9543	75.82	78.95	80.22	76.17	79.02	80.10	0.35	0.07	-0.12
E117-00-00	9418	75.74	78.89	80.18	76.09	78.95	80.05	0.35	0.06	-0.13
E117-00-00	9195	75.51	78.70	80.07	75.86	78.77	79.94	0.35	0.07	-0.13
E117-00-00	8997	75.36	78.61	80.00	75.70	78.68	79.87	0.34	0.07	-0.13
E117-00-00	8939	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	8856	74.77	77.26	78.32	75.11	77.32	78.21	0.34	0.06	-0.11
E117-00-00	8658	74.04	76.63	77.76	74.40	76.69	77.64	0.36	0.06	-0.12
E117-00-00	8307	73.54	76.15	77.27	73.90	76.21	77.16	0.36	0.06	-0.11
E117-00-00	7608	72.67	75.36	76.54	73.04	75.43	76.43	0.37	0.07	-0.11
E117-00-00	6350	72.19	74.85	76.11	72.55	74.91	75.98	0.36	0.06	-0.13
E117-00-00	5648	71.76	74.32	75.62	72.10	74.38	75.48	0.34	0.06	-0.14

Table 22.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
E117-00-00 Watershed-FEMA Effective vs. Revised Existing Water Surface Elevation Comparisor

Stream ID	Station	FEMA Effective WSEL (ft)			Revised Existing WSEL (ft)			Benefits(-)/Impacts(+) (ft)		
		10%	2%	1%	10%	2%	1%	10%	2%	1%
E117-00-00	4948	71.19	73.78	75.27	71.53	73.85	75.12	0.34	0.07	-0.15
E117-00-00	4548	70.57	73.15	74.76	70.91	73.22	74.54	0.34	0.07	-0.22
E117-00-00	4493	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	4435	70.05	72.65	73.82	70.40	72.71	73.71	0.35	0.06	-0.11
E117-00-00	4329	69.90	72.54	73.69	70.25	72.59	73.58	0.35	0.05	-0.11
E117-00-00	3917	69.32	71.92	73.06	69.66	71.97	72.96	0.34	0.05	-0.10
E117-00-00	3579	68.51	71.02	72.13	68.84	71.07	72.03	0.33	0.05	-0.10
E117-00-00	3373	68.27	70.79	71.86	68.60	70.84	71.77	0.33	0.05	-0.09
E117-00-00	3353.5	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	3333	67.70	70.58	71.64	68.03	70.62	71.54	0.33	0.04	-0.10
E117-00-00	3233	67.26	70.13	71.19	67.58	70.17	71.10	0.32	0.04	-0.09
E117-00-00	2832	66.97	69.81	70.83	67.29	69.85	70.74	0.32	0.04	-0.09
E117-00-00	2658	66.77	69.63	70.67	67.09	69.67	70.58	0.32	0.04	-0.09
E117-00-00	2631	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	2604	66.58	69.19	70.26	66.89	69.23	70.15	0.31	0.04	-0.11
E117-00-00	2502	66.49	69.09	70.14	66.80	69.13	70.04	0.31	0.04	-0.10
E117-00-00	1628	65.52	67.94	68.97	65.81	67.98	68.87	0.29	0.04	-0.10
E117-00-00	922	64.01	66.21	67.18	64.27	66.25	67.08	0.26	0.04	-0.10
E117-00-00	243	60.58	62.07	62.87	60.75	62.09	62.82	0.17	0.02	-0.05
E117-00-00	133	60.20	61.72	62.58	60.37	61.74	62.53	0.17	0.02	-0.05
E117-00-00	122.5	Inline Weir	Inline Weir	Inline Weir	Inline Weir	Inline Weir	Inline Weir	Inline Weir	Inline Weir	Inline Weir
E117-00-00	111	54.55	56.27	57.04	54.75	56.30	56.97	0.20	0.03	-0.07

Table 23.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
E117-00-00 Watershed-Mitigated TC&R Calculations

Subwatershed	Drainage Area (acres)	Drainage Area (sq.mi.)	Watershed Length (mi.) L	Length to Centroid(mi.) Lca	Channel Slope(ft./mi) S	Overland Slope(ft./mi.) So	D	Percent Urban Development 2002 DLU	Percent Channel Improvement DCI	Percent Channel Conveyance DCC	Percent Ponding DPP	DLU affected by Detention DET	Percent Impervious 2002	(TC+R)''	TC''	R''	DLU Minimum	DLU *(Detention)*
E117A1	1445.6	2.26	2.46	0.84	3.90	8.10	2.46	63.65	91	80	0	22.05	34.11	5.79	0.53	5.26	24.06	41.60
E117A2	1057.7	1.65	2.15	0.76	3.90	8.10	2.46	63.81	91	80	0	23.80	36.87	5.41	0.48	4.93	24.06	40.01
E117A3	842.2	1.32	2.01	0.92	3.90	8.10	2.46	64.78	91	80	0	23.13	35.50	5.01	0.58	4.43	24.06	41.65
E117B	1707.5	2.67	2.84	1.20	4.82	10.40	2.46	70.90	67	80	0	13.24	36.77	4.76	0.78	3.98	24.06	57.66
E117C	1125.9	1.76	2.64	1.08	5.50	7.90	2.46	75.70	58	100	0	9.01	34.60	3.15	0.68	2.48	17.59	66.69

Table 24.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
E117-00-00 Watershed-Revised Existing vs. Mitigated Flow Comparison

HEC-HMS Node	HEC-RAS Station	Revised Existing Flows (cfs)			Mitigated Flows (cfs)			Benefits (-)/Impacts (+) (cfs)		
		10%	2%	1%	10%	2%	1%	10%	2%	1%
E1170000_0001_J	922.4	3,870	5,562	6,397	3,823	5,551	6,398	-47	-11	1
	1628.1	3,780	5,430	6,240	3,740	5,420	6,240	-40	-10	0
	2832.2	3,720	5,330	6,120	3,670	5,320	6,120	-50	-10	0
	3916.7	3,610	5,170	5,930	3,570	5,160	5,930	-40	-10	0
	5648.3	3,520	5,030	5,760	3,480	5,020	5,760	-40	-10	0
	6348.5	3,380	4,810	5,500	3,330	4,800	5,490	-50	-10	-10
	7607.8	3,320	4,720	5,390	3,280	4,720	5,390	-40	0	0
	8306.2	3,220	4,570	5,210	3,180	4,570	5,210	-40	0	0
	10057.6	3,170	4,490	5,120	3,120	4,490	5,110	-50	0	-10
E1170000_0096_J	11089.8	3,036	4,289	4,883	2,993	4,289	4,874	-43	0	-9
	12154.7	2,900	4,070	4,640	2,850	4,060	4,610	-50	-10	-30
	13574.7	2,760	3,850	4,400	2,720	3,830	4,350	-40	-20	-50
	14685.2	2,590	3,580	4,100	2,550	3,550	4,020	-40	-30	-80
	15784.9	2,460	3,380	3,880	2,420	3,350	3,790	-40	-30	-90
	16769.7	2,340	3,200	3,670	2,300	3,160	3,570	-40	-40	-100
	17824.0	2,240	3,040	3,500	2,200	3,000	3,380	-40	-40	-120
	18672.3	2,130	2,880	3,320	2,100	2,830	3,190	-30	-50	-130
	19343.5	2,050	2,760	3,180	2,020	2,710	3,050	-30	-50	-130
E1170000_0193_J	20304.1	1,988	2,665	3,078	1,956	2,611	2,937	-32	-54	-142
	21277.8	1,910	2,630	3,070	1,870	2,570	2,930	-40	-60	-140
	22221.8	1,840	2,600	3,050	1,790	2,530	2,910	-50	-70	-140
	22975.8	1,770	2,570	3,040	1,720	2,490	2,900	-50	-80	-140
	24073.9	1,720	2,550	3,030	1,660	2,460	2,890	-60	-90	-140
E1170000_0241_J	24961.1	1,640	2,510	3,020	1,519	2,383	2,871	-121	-127	-149
E1170000_0254_J	25935.0	1,586	2,483	3,004	1,519	2,466	2,978	-67	-17	-26
	27262.8	1,340	2,270	2,800	1,280	2,220	2,760	-60	-50	-40
	29085.6	1,064	1,583	1,868	1,006	1,441	1,749	-58	-141	-119
	29930.0	1,040	1,540	1,810	980	1,390	1,690	-60	-150	-120
	32580.0	1,000	1,480	1,730	930	1,300	1,600	-70	-180	-130
	32602.0	980	1,440	1,680	910	1,250	1,540	-70	-190	-140
E1170000_0326_J	32752.1	977	1,444	1,680	908	1,249	1,540	-69	-195	-140
	32919.6	870	1,310	1,500	870	1,310	1,500	0	0	0
	33670.1	850	1,280	1,470	850	1,280	1,470	0	0	0
	34321.4	770	1,160	1,330	770	1,160	1,330	0	0	0
	35311.5	710	1,060	1,230	710	1,060	1,230	0	0	0
	35996.1	620	925	1,080	620	925	1,080	0	0	0

Table 25.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
E117-00-00 Revised Existing vs. Mitigated Watershed-Water Surface Elevation Comparison

		Revised Existing WSEL (ft)			Mitigated WSEL (ft)			Benefits/Impacts (ft)		
Stream ID	Station	10%	2%	1%	10%	2%	1%	10%	2%	1%
E117-00-00	36002	99.18	99.60	101.32	99.16	99.60	101.32	-0.02	0.00	0.00
E117-00-00	35901	99.14	99.53	96.33	99.12	99.53	96.33	-0.02	0.00	0.00
E117-00-00	35811	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert
E117-00-00	35718	96.72	98.09	98.45	96.68	97.81	98.37	-0.04	-0.28	-0.08
E117-00-00	35566	96.72	98.09	98.45	96.67	97.80	98.37	-0.05	-0.29	-0.08
E117-00-00	35315	96.65	98.00	98.35	96.60	97.71	98.26	-0.05	-0.29	-0.09
E117-00-00	34437	96.59	97.94	98.29	96.54	97.64	98.20	-0.05	-0.30	-0.09
E117-00-00	34311	96.29	97.81	98.27	96.23	97.50	98.05	-0.06	-0.31	-0.22
E117-00-00	34267	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert
E117-00-00	34221	96.06	97.83	98.28	96.00	97.50	98.07	-0.06	-0.33	-0.21
E117-00-00	33907	96.10	97.85	98.27	96.05	97.53	98.10	-0.05	-0.32	-0.17
E117-00-00	33675	96.06	97.82	98.25	96.01	97.49	98.06	-0.05	-0.33	-0.19
E117-00-00	32920	95.99	97.79	98.24	95.93	97.44	98.03	-0.06	-0.35	-0.21
E117-00-00	32902	95.92	97.79	98.24	95.84	97.45	98.04	-0.08	-0.34	-0.20
E117-00-00	32836	95.06	97.68	98.19	94.92	97.09	97.94	-0.14	-0.59	-0.25
E117-00-00	32825.5	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	32811	94.64	97.64	98.15	94.25	96.49	97.91	-0.39	-1.15	-0.24
E117-00-00	32762	94.53	97.67	98.16	94.20	96.50	97.93	-0.33	-1.17	-0.23
E117-00-00	32747.5	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	32734	94.09	97.04	97.37	93.76	96.38	97.26	-0.33	-0.66	-0.11
E117-00-00	32700	94.17	97.04	97.37	93.84	96.07	97.26	-0.33	-0.97	-0.11
E117-00-00	32652	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert
E117-00-00	32602	93.85	95.83	96.41	93.59	95.34	96.23	-0.26	-0.49	-0.18
E117-00-00	32588	93.83	95.65	96.26	93.58	95.21	96.09	-0.25	-0.44	-0.17
E117-00-00	31272	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert
E117-00-00	29960	92.97	93.76	94.03	92.86	93.74	94.06	-0.11	-0.02	0.03
E117-00-00	29924	92.95	93.75	94.01	92.85	93.72	94.06	-0.10	-0.03	0.05
E117-00-00	29890.5	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	29852	92.91	93.70	93.96	92.81	93.64	93.95	-0.10	-0.06	-0.01
E117-00-00	29805	92.92	93.70	93.97	92.81	93.64	93.96	-0.11	-0.06	-0.01
E117-00-00	29680	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	29542	92.81	93.62	93.90	92.61	93.51	93.86	-0.20	-0.11	-0.04
E117-00-00	29500	92.78	93.60	93.88	92.60	93.48	93.84	-0.18	-0.12	-0.04
E117-00-00	29462	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	29416	92.76	93.54	93.84	92.57	93.41	93.74	-0.19	-0.13	-0.10
E117-00-00	29325	92.74	93.53	93.82	92.55	93.40	93.72	-0.19	-0.13	-0.10
E117-00-00	29185	92.73	93.51	93.80	92.54	93.38	93.70	-0.19	-0.13	-0.10
E117-00-00	29088	92.72	93.49	93.77	92.54	93.36	93.68	-0.18	-0.13	-0.09
E117-00-00	28999.5	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert
E117-00-00	28900	92.70	93.46	93.74	92.49	93.34	93.65	-0.21	-0.12	-0.09
E117-00-00	28800	92.67	93.45	93.74	92.46	93.32	93.64	-0.21	-0.13	-0.10
E117-00-00	28684	92.60	93.36	93.63	92.39	93.24	93.55	-0.21	-0.12	-0.08
E117-00-00	28302	92.46	93.17	93.41	92.25	93.07	93.34	-0.21	-0.10	-0.07
E117-00-00	27886	92.38	93.02	93.24	92.16	92.95	93.19	-0.22	-0.07	-0.05
E117-00-00	27836	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert	Culvert
E117-00-00	27778	90.99	92.21	92.68	90.77	92.14	92.64	-0.22	-0.07	-0.04
E117-00-00	27568	90.93	92.12	92.58	90.71	92.07	92.55	-0.22	-0.05	-0.03
E117-00-00	27267	90.72	91.79	92.21	90.50	91.73	92.17	-0.22	-0.06	-0.04
E117-00-00	25938	89.93	90.93	91.27	89.65	90.81	91.18	-0.28	-0.12	-0.09
E117-00-00	24962	89.48	90.54	90.85	89.08	90.39	90.74	-0.40	-0.15	-0.11
E117-00-00	24075	88.70	90.00	90.34	88.35	89.77	90.16	-0.35	-0.23	-0.18
E117-00-00	23347	87.63	88.87	89.33	87.58	88.85	89.25	-0.05	-0.02	-0.08
E117-00-00	22996	87.64	88.89	89.29	87.55	88.84	89.22	-0.09	-0.05	-0.07
E117-00-00	22931	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	22854	87.43	88.51	88.81	87.35	88.47	88.74	-0.08	-0.04	-0.07

Table 25.0

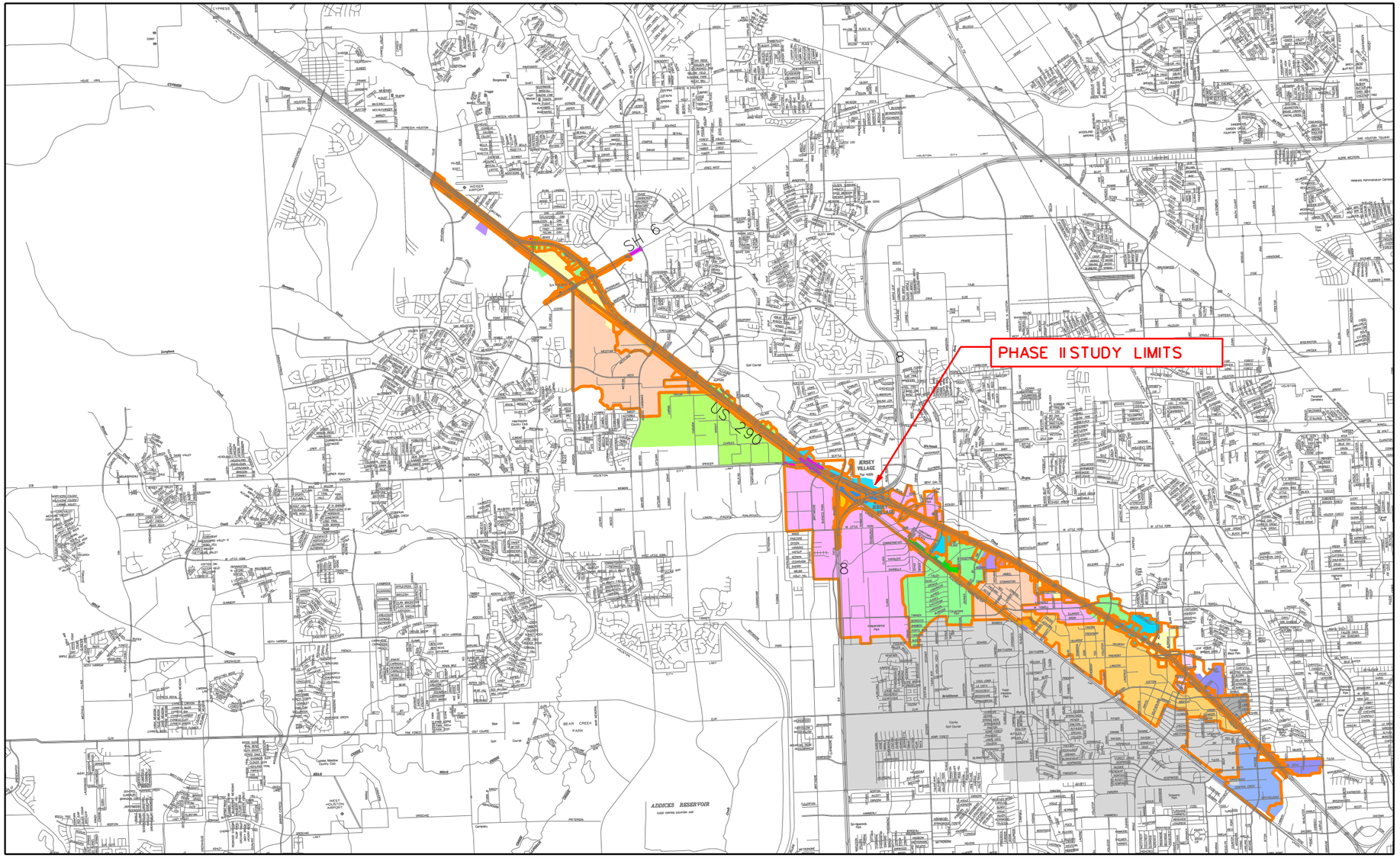
US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
E117-00-00 Revised Existing vs. Mitigated Watershed-Water Surface Elevation Comparison

Stream ID	Station	Revised Existing WSEL (ft)			Mitigated WSEL (ft)			Benefits/Impacts (ft)		
		10%	2%	1%	10%	2%	1%	10%	2%	1%
E117-00-00	22615	87.19	88.29	88.63	87.11	88.23	88.54	-0.08	-0.06	-0.09
E117-00-00	22223	86.95	88.13	88.48	86.87	88.08	88.39	-0.08	-0.05	-0.09
E117-00-00	21280	86.07	87.52	87.95	85.99	87.46	87.84	-0.08	-0.06	-0.11
E117-00-00	20308	84.28	86.16	86.98	84.20	86.10	86.81	-0.08	-0.06	-0.17
E117-00-00	19566	83.64	85.62	86.43	83.56	85.57	86.28	-0.08	-0.05	-0.15
E117-00-00	19349	83.47	85.48	86.30	83.38	85.43	86.15	-0.09	-0.05	-0.15
E117-00-00	19322	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	19290	83.36	85.28	85.99	83.28	85.24	85.87	-0.08	-0.04	-0.12
E117-00-00	19077	83.18	85.12	85.81	83.10	85.07	85.71	-0.08	-0.05	-0.10
E117-00-00	18678	82.95	84.93	85.60	82.86	84.88	85.52	-0.09	-0.05	-0.08
E117-00-00	17828	82.43	84.50	85.15	82.35	84.45	85.09	-0.08	-0.05	-0.06
E117-00-00	17658	82.40	84.46	85.13	82.32	84.42	85.07	-0.08	-0.04	-0.06
E117-00-00	17630	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	17597	82.32	84.33	85.04	82.23	84.29	84.98	-0.09	-0.04	-0.06
E117-00-00	17414	82.21	84.24	84.91	82.12	84.20	84.86	-0.09	-0.04	-0.05
E117-00-00	16773	81.85	83.93	84.59	81.76	83.90	84.55	-0.09	-0.03	-0.04
E117-00-00	16140	81.51	83.70	84.37	81.42	83.67	84.34	-0.09	-0.03	-0.03
E117-00-00	15781	81.37	83.58	84.26	81.28	83.56	84.22	-0.09	-0.02	-0.04
E117-00-00	15698	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	15619	81.26	83.29	83.89	81.17	83.27	83.84	-0.09	-0.02	-0.05
E117-00-00	15364	81.18	83.24	83.85	81.10	83.22	83.81	-0.08	-0.02	-0.04
E117-00-00	15001	81.09	83.18	83.80	81.01	83.15	83.75	-0.08	-0.03	-0.05
E117-00-00	14709	80.99	83.11	83.75	80.91	83.08	83.70	-0.08	-0.03	-0.05
E117-00-00	14698.5	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	14681	80.96	83.07	83.70	80.87	83.04	83.65	-0.09	-0.03	-0.05
E117-00-00	14156	80.59	82.68	83.42	80.50	82.66	83.37	-0.09	-0.02	-0.05
E117-00-00	14121.5	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	14083	80.49	82.48	83.18	80.40	82.47	83.14	-0.09	-0.01	-0.04
E117-00-00	13877	80.24	82.29	83.06	80.16	82.28	83.04	-0.08	-0.01	-0.02
E117-00-00	13580	79.98	82.10	82.93	79.89	82.09	82.91	-0.09	-0.01	-0.02
E117-00-00	12476	79.15	81.66	82.61	79.05	81.65	82.60	-0.10	-0.01	-0.01
E117-00-00	12164	78.58	81.32	82.48	78.49	81.31	82.47	-0.09	-0.01	-0.01
E117-00-00	12151	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	12138	78.53	81.13	82.26	78.44	81.13	82.25	-0.09	0.00	-0.01
E117-00-00	11757	78.20	80.86	82.05	78.10	80.86	82.04	-0.10	0.00	-0.01
E117-00-00	11096	77.58	80.32	81.61	77.48	80.32	81.60	-0.10	0.00	-0.01
E117-00-00	10371	77.25	80.10	81.44	77.15	80.10	81.43	-0.10	0.00	-0.01
E117-00-00	10050	76.99	79.90	81.29	76.89	79.89	81.28	-0.10	-0.01	-0.01
E117-00-00	9975	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	9902	76.65	79.74	80.93	76.55	79.73	80.92	-0.10	-0.01	-0.01
E117-00-00	9794	76.31	79.43	80.60	76.21	79.43	80.59	-0.10	0.00	-0.01
E117-00-00	9694	76.27	79.40	80.59	76.18	79.40	80.58	-0.09	0.00	-0.01
E117-00-00	9592	76.23	79.37	80.57	76.14	79.37	80.56	-0.09	0.00	-0.01
E117-00-00	9569.5	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	9543	76.17	79.02	80.10	76.09	79.01	80.09	-0.08	-0.01	-0.01
E117-00-00	9418	76.09	78.95	80.05	76.02	78.95	80.04	-0.07	0.00	-0.01
E117-00-00	9195	75.86	78.77	79.94	75.78	78.76	79.93	-0.08	-0.01	-0.01
E117-00-00	8997	75.70	78.68	79.87	75.63	78.67	79.86	-0.07	-0.01	-0.01
E117-00-00	8939	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	8856	75.11	77.32	78.21	75.04	77.31	78.21	-0.07	-0.01	0.00
E117-00-00	8658	74.40	76.69	77.64	74.33	76.68	77.64	-0.07	-0.01	0.00
E117-00-00	8307	73.90	76.21	77.16	73.83	76.20	77.16	-0.07	-0.01	0.00
E117-00-00	7608	73.04	75.43	76.43	72.96	75.41	76.43	-0.08	-0.02	0.00
E117-00-00	6350	72.55	74.91	75.98	72.47	74.90	75.97	-0.08	-0.01	-0.01
E117-00-00	5648	72.10	74.38	75.48	72.03	74.36	75.48	-0.07	-0.02	0.00

Table 25.0

US 290 / Hempstead Corridor Phase II - Drainage Impact & Mitigation Study
E117-00-00 Revised Existing vs. Mitigated Watershed-Water Surface Elevation Comparison

Stream ID	Station	Revised Existing WSEL (ft)			Mitigated WSEL (ft)			Benefits/Impacts (ft)		
		10%	2%	1%	10%	2%	1%	10%	2%	1%
E117-00-00	4948	71.53	73.85	75.12	71.46	73.83	75.11	-0.07	-0.02	-0.01
E117-00-00	4548	70.91	73.22	74.54	70.84	73.20	74.53	-0.07	-0.02	-0.01
E117-00-00	4493	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	4435	70.40	72.71	73.71	70.32	72.69	73.71	-0.08	-0.02	0.00
E117-00-00	4329	70.25	72.59	73.58	70.17	72.57	73.58	-0.08	-0.02	0.00
E117-00-00	3917	69.66	71.97	72.96	69.59	71.96	72.95	-0.07	-0.01	-0.01
E117-00-00	3579	68.84	71.07	72.03	68.76	71.05	72.02	-0.08	-0.02	-0.01
E117-00-00	3373	68.60	70.84	71.77	68.53	70.82	71.76	-0.07	-0.02	-0.01
E117-00-00	3353.5	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	3333	68.03	70.62	71.54	67.96	70.61	71.53	-0.07	-0.01	-0.01
E117-00-00	3233	67.58	70.17	71.10	67.51	70.15	71.09	-0.07	-0.02	-0.01
E117-00-00	2832	67.29	69.85	70.74	67.22	69.83	70.73	-0.07	-0.02	-0.01
E117-00-00	2658	67.09	69.67	70.58	67.02	69.66	70.57	-0.07	-0.01	-0.01
E117-00-00	2631	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge	Bridge
E117-00-00	2604	66.89	69.23	70.15	66.82	69.22	70.15	-0.07	-0.01	0.00
E117-00-00	2502	66.80	69.13	70.04	66.73	69.12	70.04	-0.07	-0.01	0.00
E117-00-00	1628	65.81	67.98	68.87	65.74	67.97	68.87	-0.07	-0.01	0.00
E117-00-00	922	64.27	66.25	67.08	64.21	66.24	67.08	-0.06	-0.01	0.00
E117-00-00	243	60.75	62.09	62.82	60.70	62.09	62.82	-0.05	0.00	0.00
E117-00-00	133	60.37	61.74	62.53	60.33	61.74	62.53	-0.04	0.00	0.00
E117-00-00	122.5	Inline Weir	Inline Weir	Inline Weir	Inline Weir	Inline Weir	Inline Weir	Inline Weir	Inline Weir	Inline Weir
E117-00-00	111	54.75	56.30	56.97	54.70	56.29	56.97	-0.05	-0.01	0.00



N

0 4000 8000 16000

SCALE 1" = 8000'

PRELIMINARY
SUBJECT TO CHANGE

COMMUNITY 290 DRIVEN

Program Office
Brookhollow III,
2950 North Loop W.
Suite 1150
Houston, Texas 77092

Texas Department of Transportation

US 290 PMC

VICINITY MAP

SHEET 1 OF 1

EXHIBIT 1

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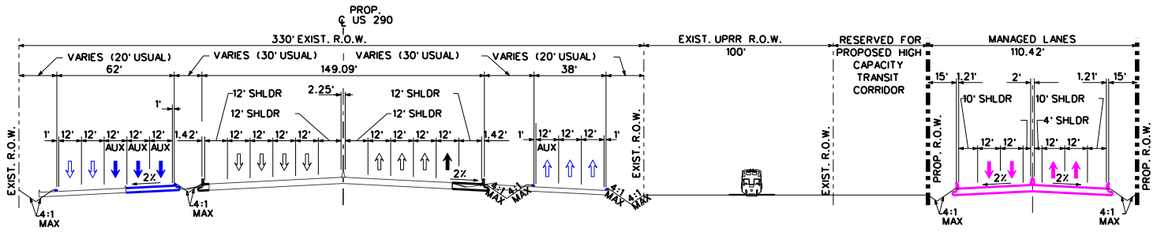

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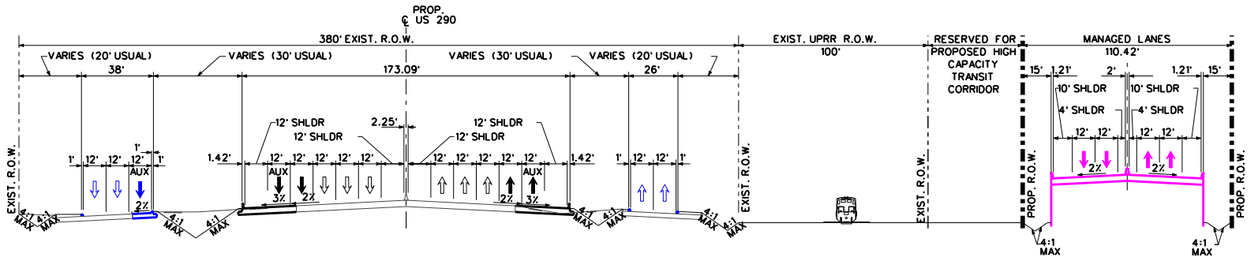
STA. 2080+00



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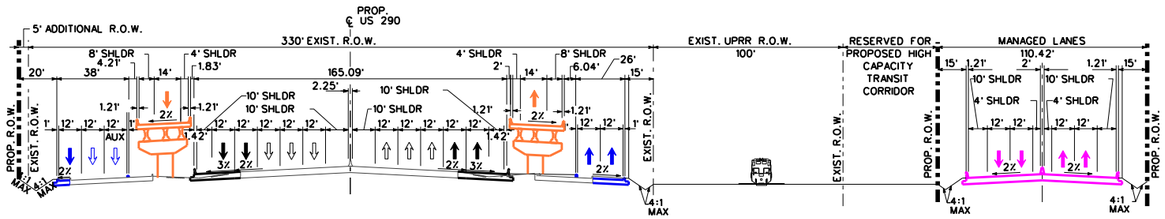

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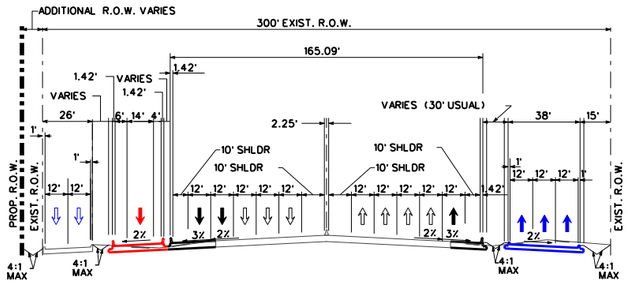

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STA. 2226+00

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Program Office
Brookhollow III,
2950 North Loop W.
Suite 1150
Houston, Texas 77092

Texas Department of Transportation

US 290 PMC

TYPICAL SECTIONS

SHEET 1 OF 9

8/27/2009

EXHIBIT 2

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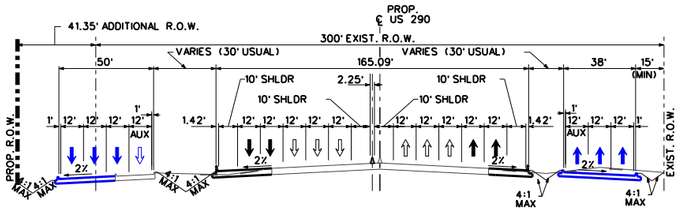

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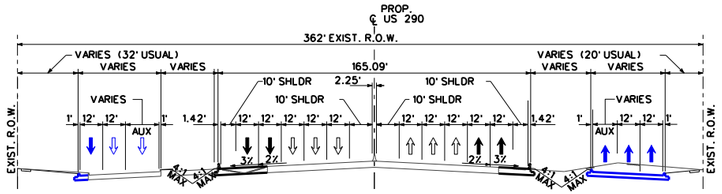

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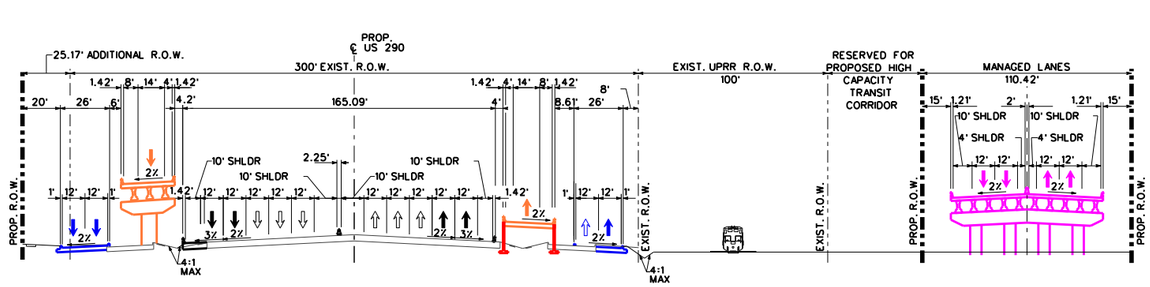

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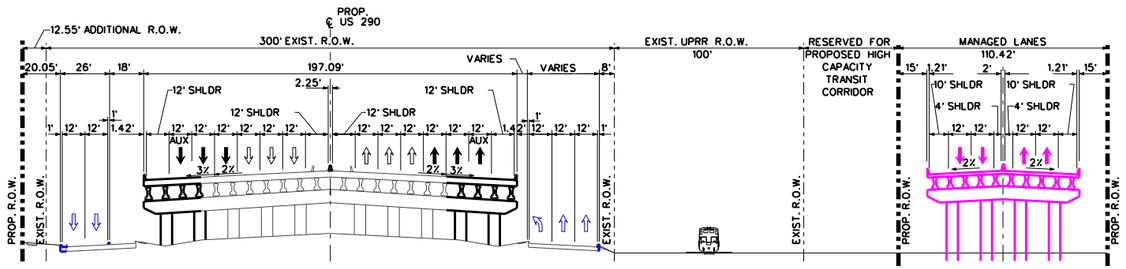

PROPOSED US 290 IMPROVEMENTS
STA. 2329+00

PRELIMINARY
SUBJECT TO CHANGE

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Texas Department of Transportation

US 290 PMC

TYPICAL SECTION

SHEET 2 OF 9

8/27/2009

EXHIBIT 2

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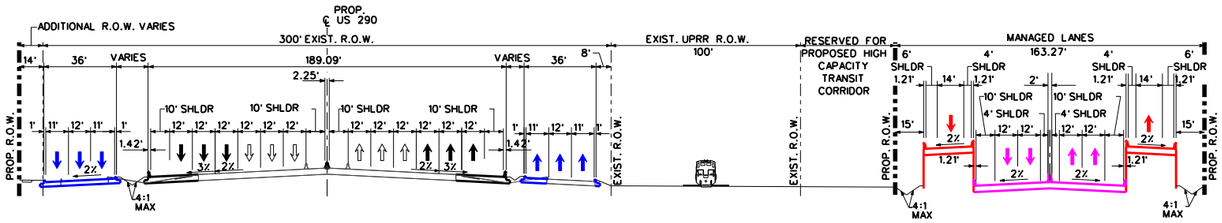
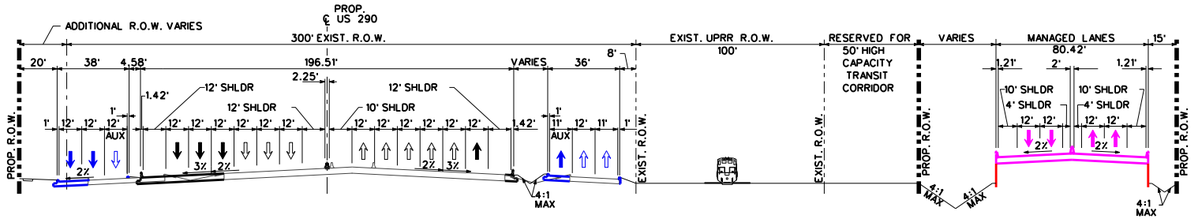
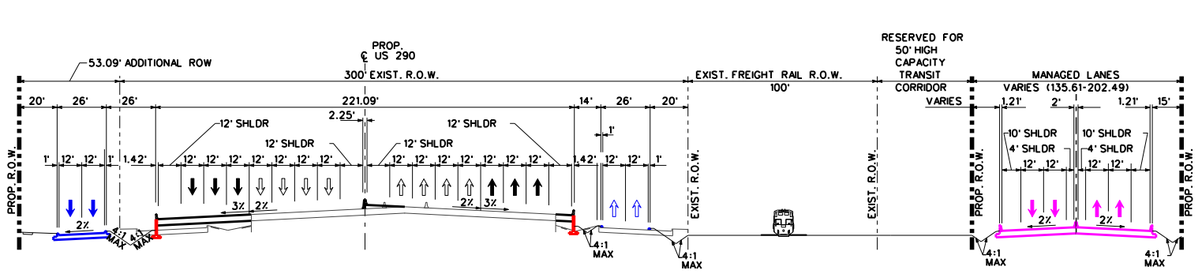


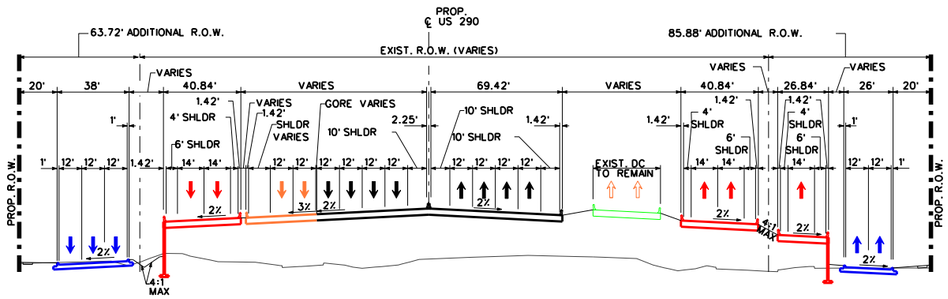
PROPOSED US 290 IMPROVEMENTS
STA. 2360+00



PROPOSED US 290 IMPROVEMENTS
STA. 2425+00



PROPOSED US 290 IMPROVEMENTS
STA. 2448+00



PROPOSED US 290 IMPROVEMENTS
STA. 2485+00

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TYPICAL SECTIONS

SHEET 3 OF 9

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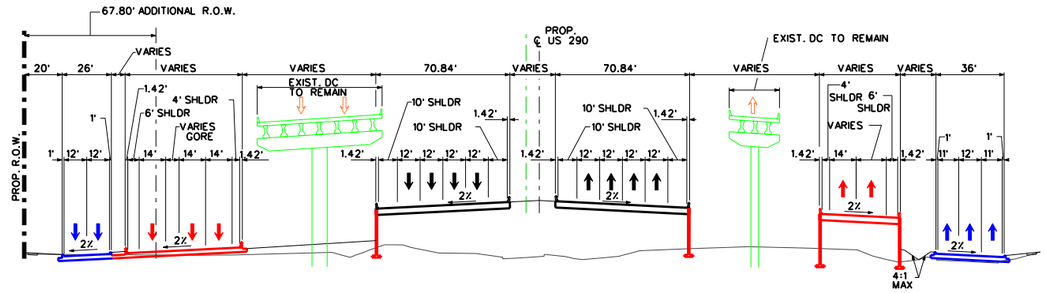
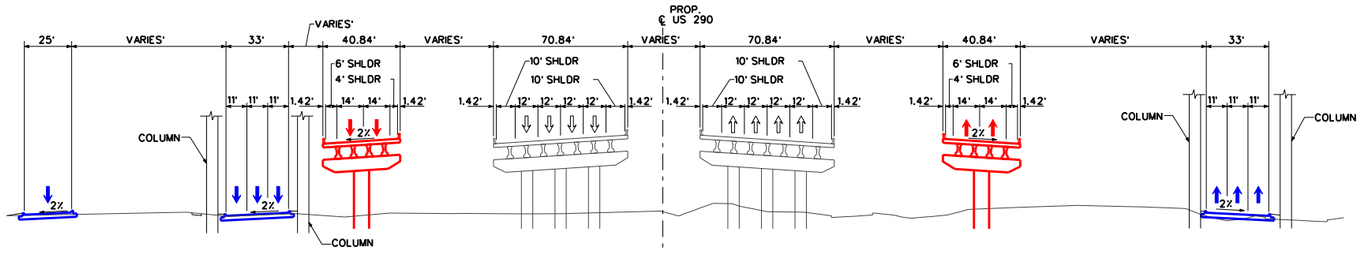
EXHIBIT 2

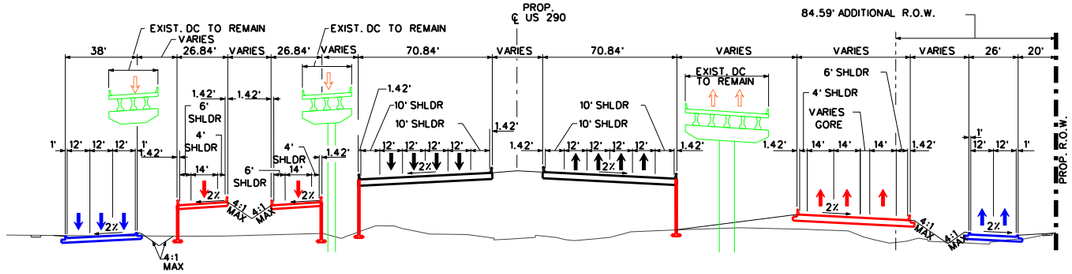
...\DRA\US 290_Phase1_Typ3.dgn



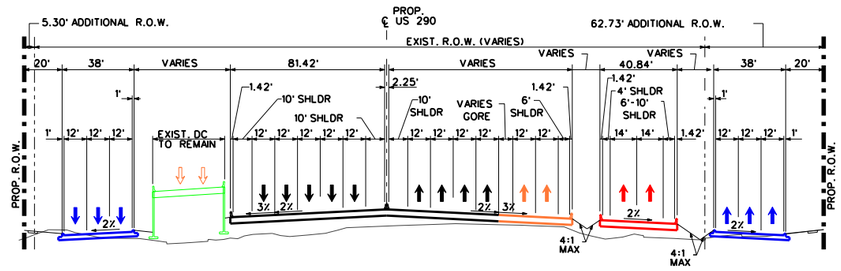
PROPOSED US 290 IMPROVEMENTS
STA. 2495+00



PROPOSED US 290 IMPROVEMENTS
STA. 2505+00



PROPOSED US 290 IMPROVEMENTS
STA. 2516+00



PROPOSED US 290 IMPROVEMENTS
STA. 2525+00

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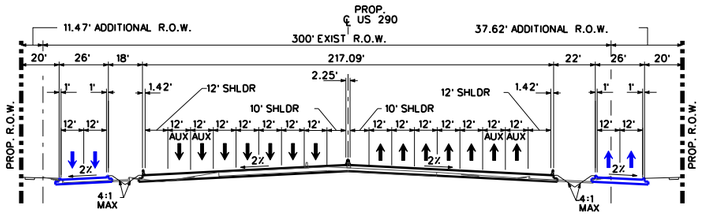
TYPICAL SECTIONS

SHEET 4 OF 9

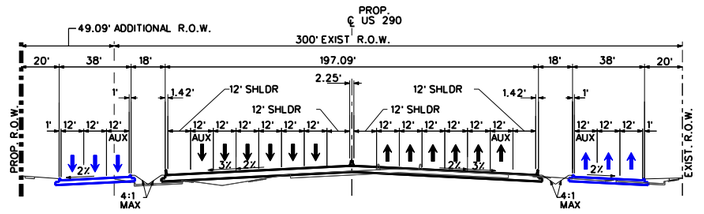
8/27/2009

EXHIBIT 2

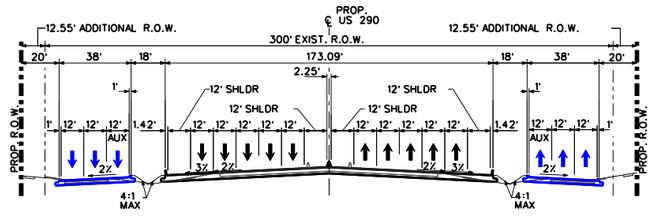
...\DRA\US 290_Phase1_Typ4.dgn



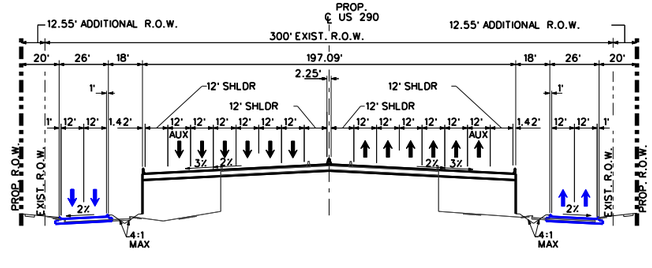
PROPOSED US 290 IMPROVEMENTS
STA. 2567+00



PROPOSED US 290 IMPROVEMENTS
STA. 2590+00



PROPOSED US 290 IMPROVEMENTS
STA. 2645+00



PROPOSED US 290 IMPROVEMENTS
STA. 2666+00

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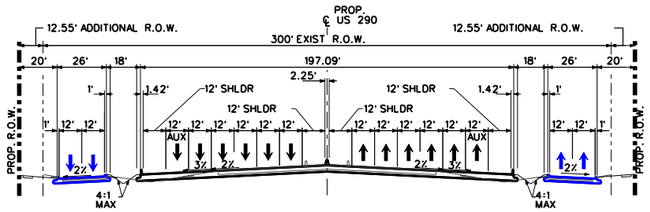
TYPICAL SECTIONS

SHEET 5 OF 9

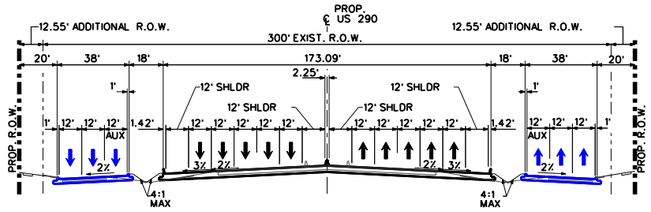
8/27/2009

EXHIBIT 2

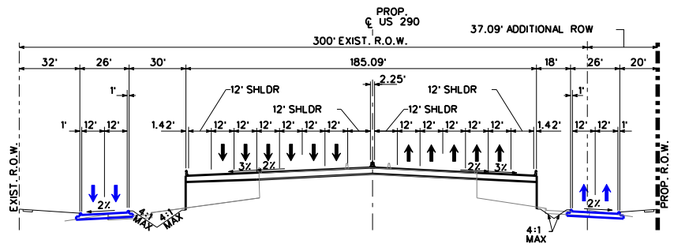
...\DRA\US 290_Phase1_Typ5.dgn



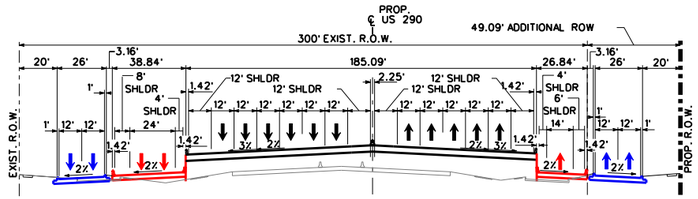
PROPOSED US 290 IMPROVEMENTS
STA. 2698+00



PROPOSED US 290 IMPROVEMENTS
STA. 2709+00



PROPOSED US 290 IMPROVEMENTS
STA. 2747+00



PROPOSED US 290 IMPROVEMENTS
STA. 2767+00

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SHEET 6 OF 9

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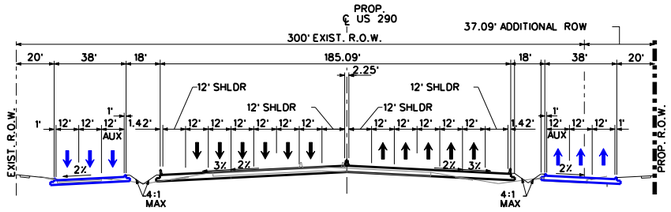
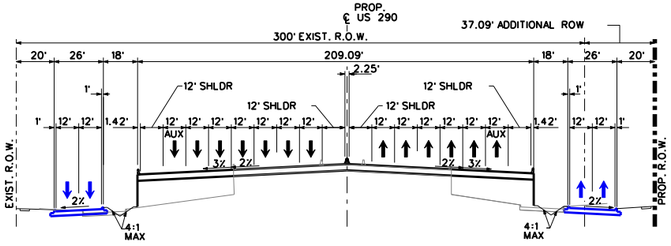
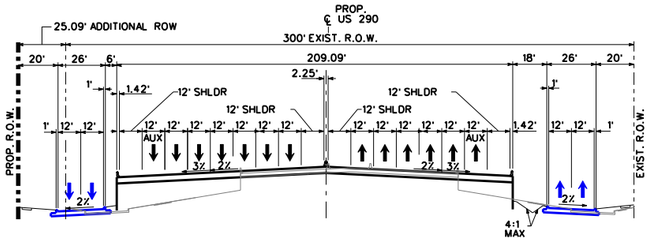
...\DRA\US 290_Phase1_Typ5.dgn



PROPOSED US 290 IMPROVEMENTS
STA. 2802+00



PROPOSED US 290 IMPROVEMENTS
STA. 2820+00



PROPOSED US 290 IMPROVEMENTS
STA. 2841+50

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TYPICAL SECTIONS

SHEET 7 OF 9

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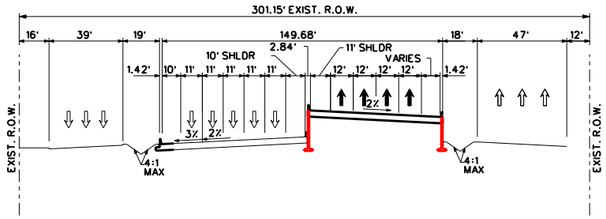
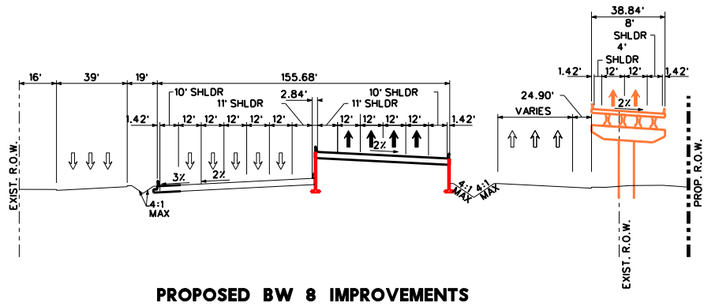
EXHIBIT 2

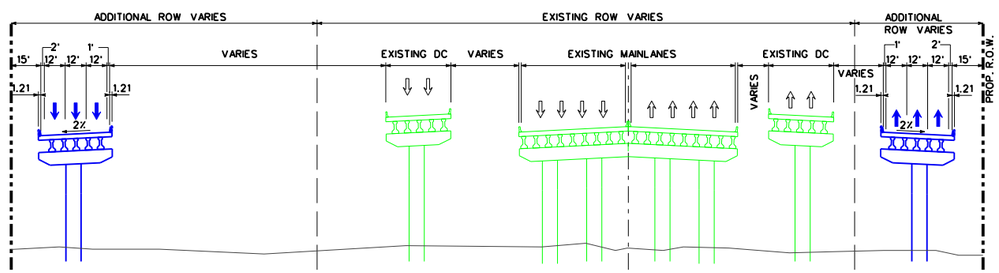
...\DRA\US 290_Pissell_Typ7.dgn



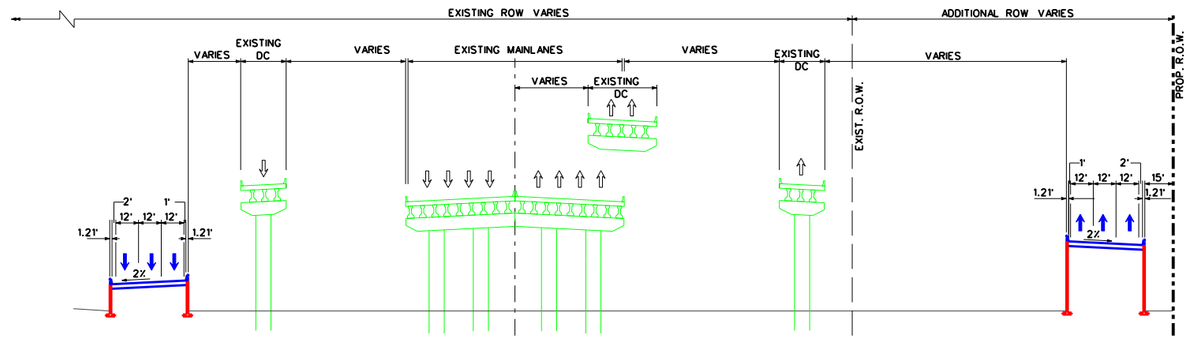
PROPOSED BW 8 IMPROVEMENTS
STA. 923+00



PROPOSED BW 8 IMPROVEMENTS
STA. 932.+00



PROPOSED BW 8 IMPROVEMENTS
STA. 957+00



PROPOSED BW 8 IMPROVEMENTS
STA. 965+00

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TYPICAL SECTIONS

SHEET 8 OF 9

8/27/2009

EXHIBIT 2

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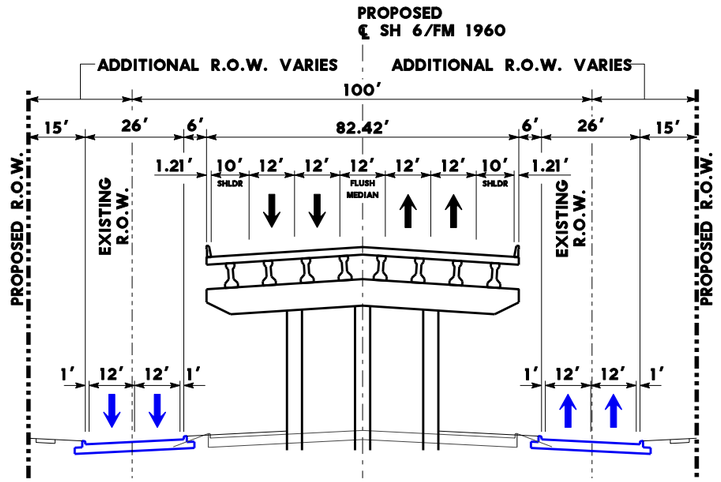
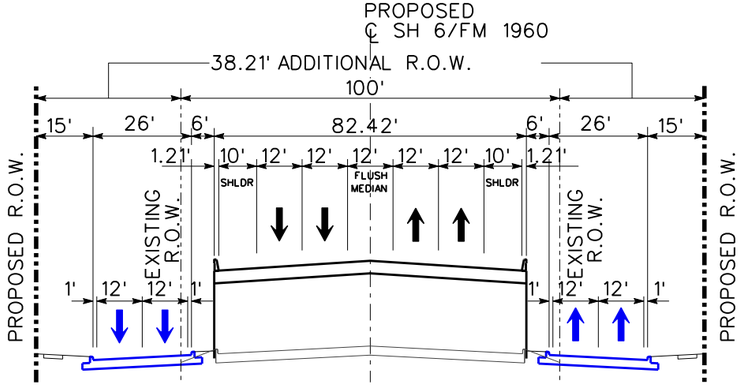


PROPOSED SH 6 IMPROVEMENTS
STA. 146+00



PROPOSED SH 6 IMPROVEMENTS
STA. 156+00

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TYPICAL SECTIONS

SHEET 9 OF 9

8/27/2009

EXHIBIT 2

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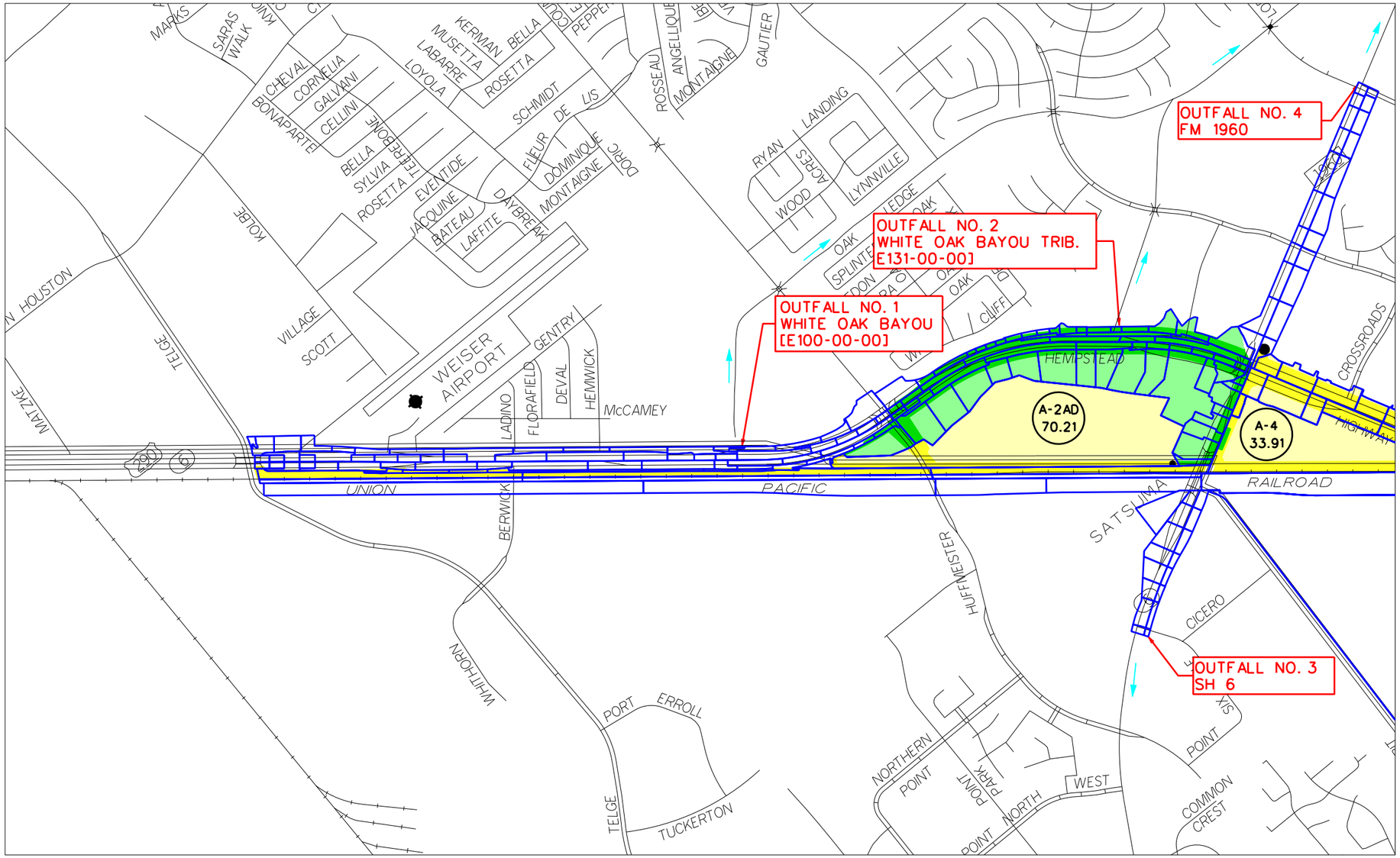

LEGEND

LIGHTER COLOR	US 290 OFFSITE DRAINAGE AREA
DARKER COLOR	US 290 ONSITE DRAINAGE AREA
ML-03 4.49	DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)
→	FLOW DIRECTION

0 750 1500 3000

SCALE 1" = 1500'

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US 290 PMC

OVERALL EXISTING DRAINAGE AREA MAP

SHEET 1 OF 5

8/27/2009 | EXHIBIT 3

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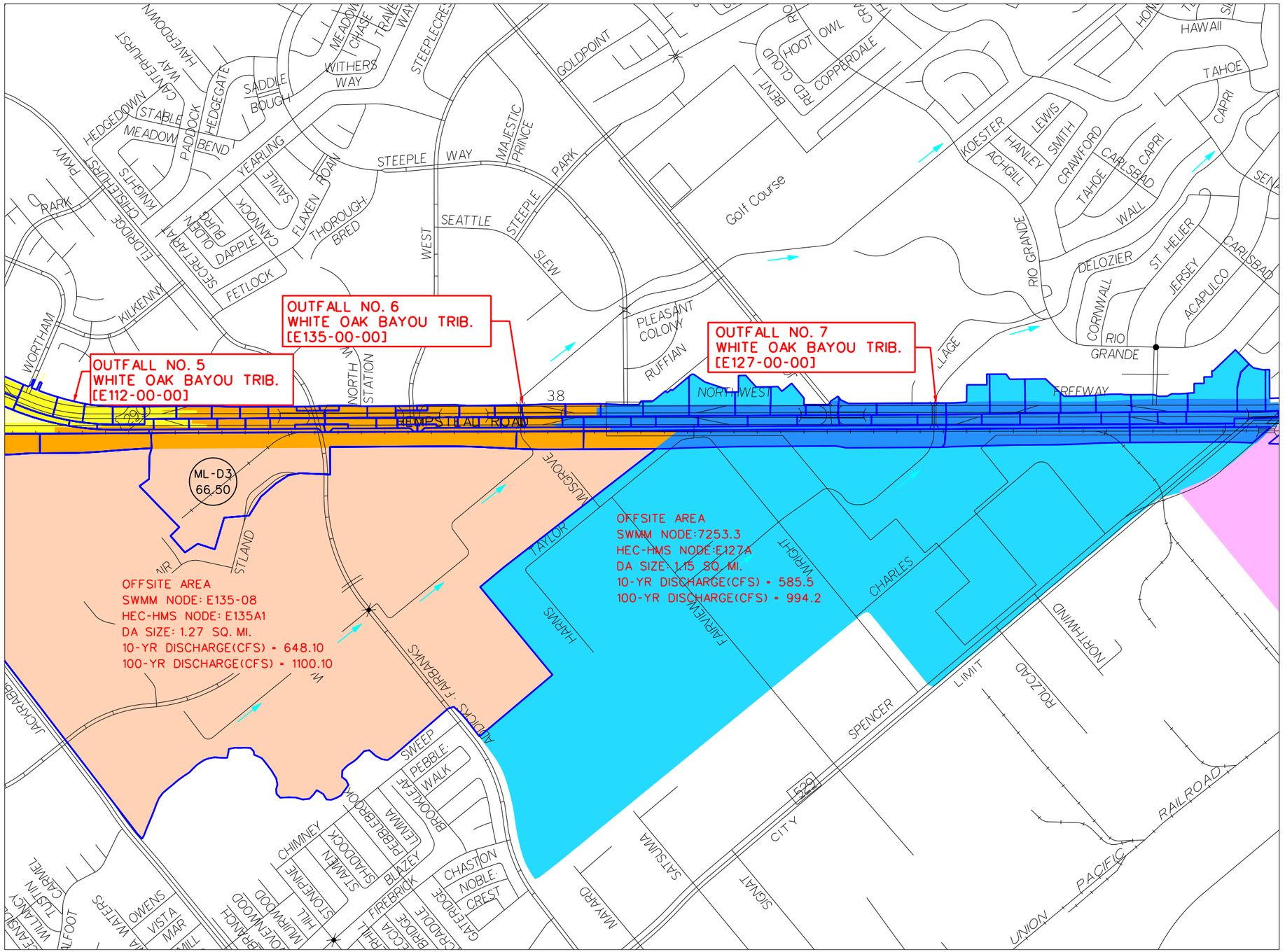

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LEGEND

LIGHTER COLOR	US 290 OFFSITE DRAINAGE AREA
DARKER COLOR	US 290 ONSITE DRAINAGE AREA
ML-03 4.49	DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)
→	FLOW DIRECTION

0 750 1500 3000

SCALE 1" = 1500'

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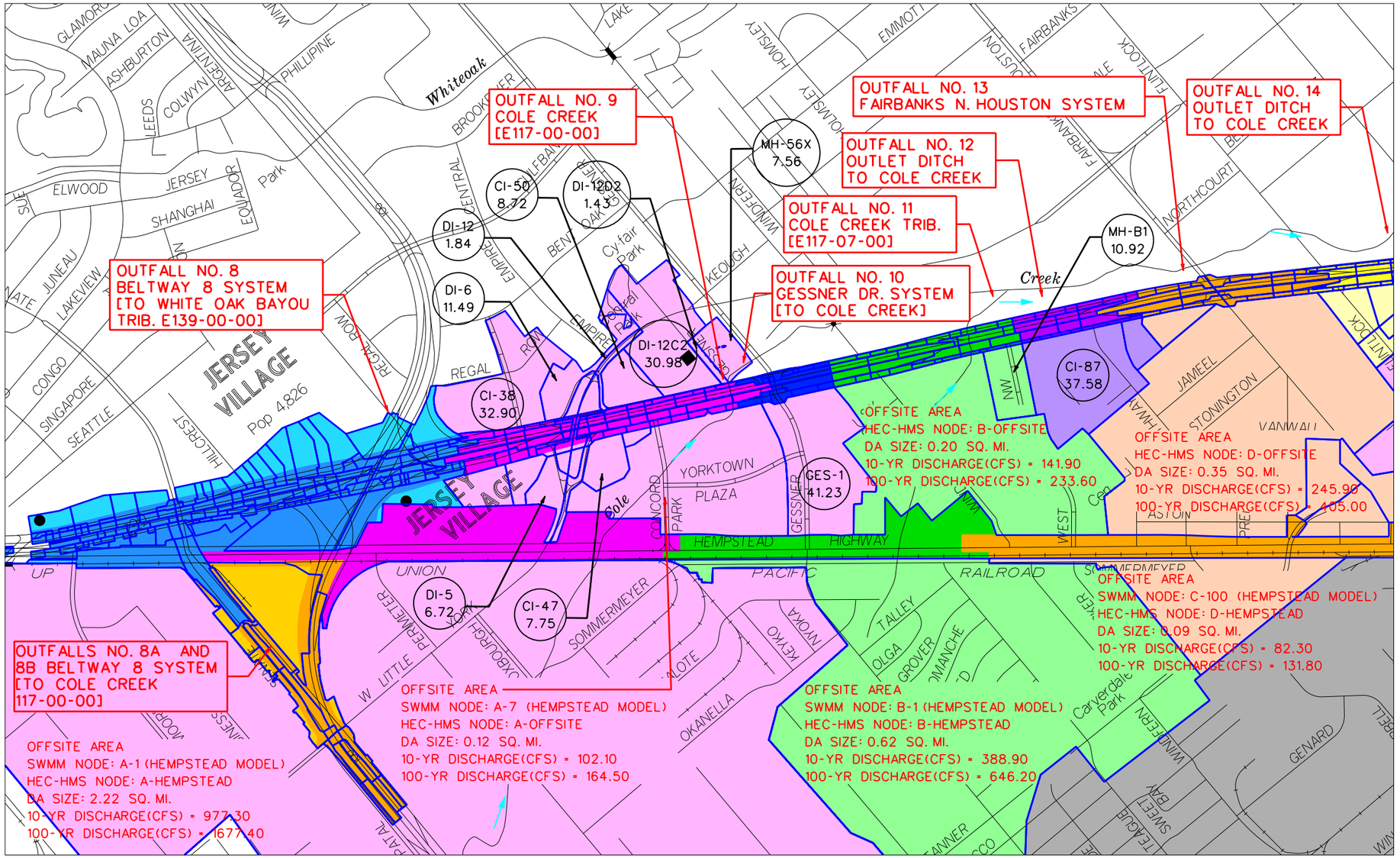
OVERALL EXISTING DRAINAGE AREA MAP

SHEET 2 OF 5

8/27/2009 | EXHIBIT 3

...\DRA\Exist_Overall_02.dgn



LEGEND

LIGHTER COLOR	US 290 OFFSITE DRAINAGE AREA
DARKER COLOR	US 290 ONSITE DRAINAGE AREA
ML-03 4.49	DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)
→	FLOW DIRECTION

NOTE:

1. FOR OUTFALL 9 THE OFFSITE INFLOW HYDROGRAPH AT NODE CI-54BX IS EQUAL TO THE OUTFLOW HYDROGRAPH FROM NODE A-8 IN THE HEMPSTEAD SWMM MODEL
2. FOR OUTFALL 11 THE OFFSITE INFLOW HYDROGRAPH AT NODE B-6 IS EQUAL TO THE COMBINED HYROGRAPH FROM NODE B7 IN THE HEMPSTREAD SWMM MODEL WITH THE B-OFFSITE HYDROGRAPH
3. FOR OUTFALL 13 THE OFFSITE INFLOW HYDROGRAPH AT NODE MH-D2 IS EQAUL TO THE COMBINED HYROGRAPH FROM NODES C-7 AND FAI-7 IN THE HEMPSTREAD SWMM MODEL WITH THE D-OFFSITE HYDROGRAPH

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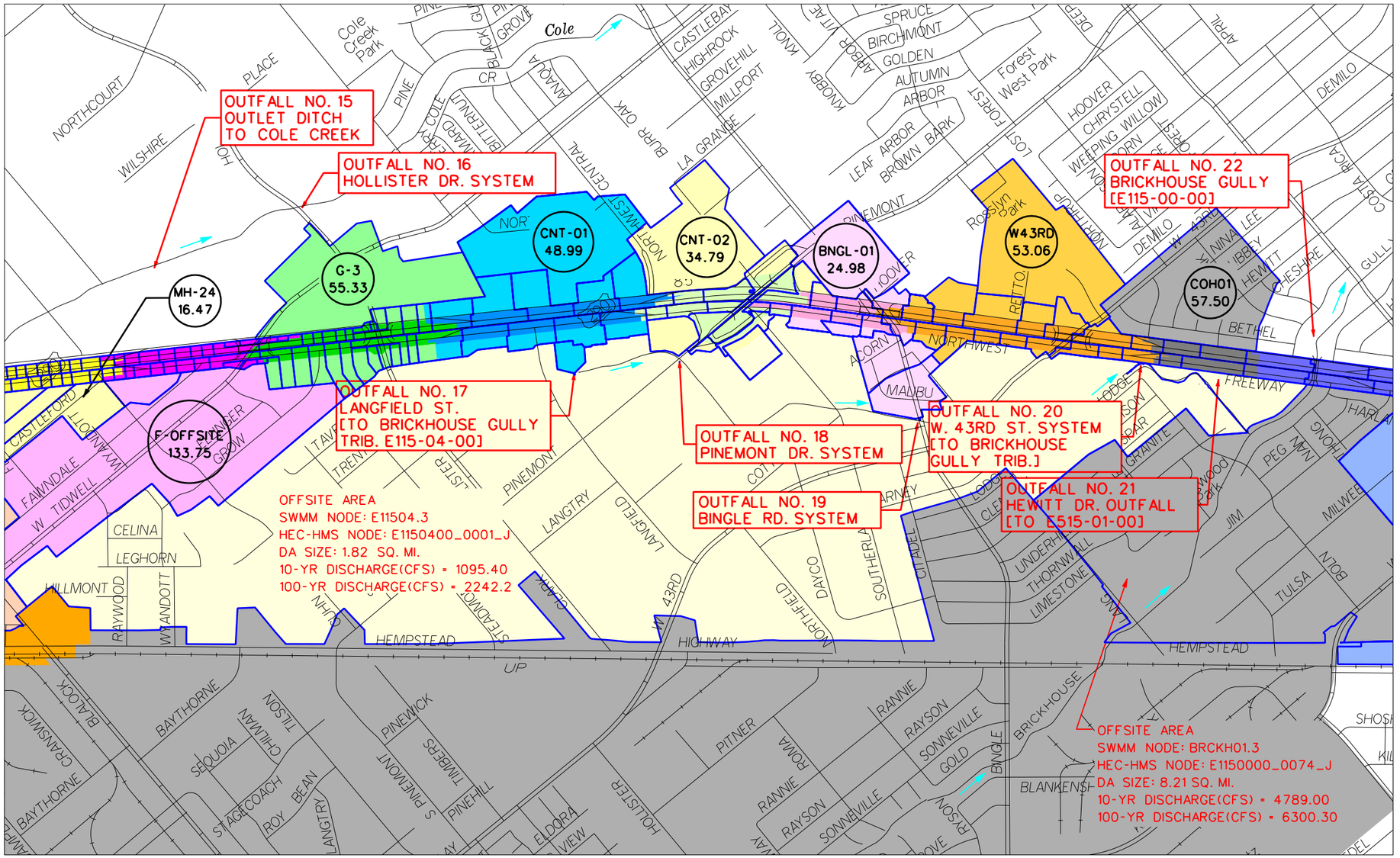
OVERALL EXISTING DRAINAGE AREA MAP

SHEET 3 OF 5

2/28/2012 | EXHIBIT 3

...\Exist_Overall_03-BW8rev.dgn



LEGEND

LIGHTER COLOR	US 290 OFFSITE DRAINAGE AREA
DARKER COLOR	US 290 ONSITE DRAINAGE AREA
ML-03 4.49	DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)
→	FLOW DIRECTION

0 750 1500 3000

SCALE 1" = 1500'

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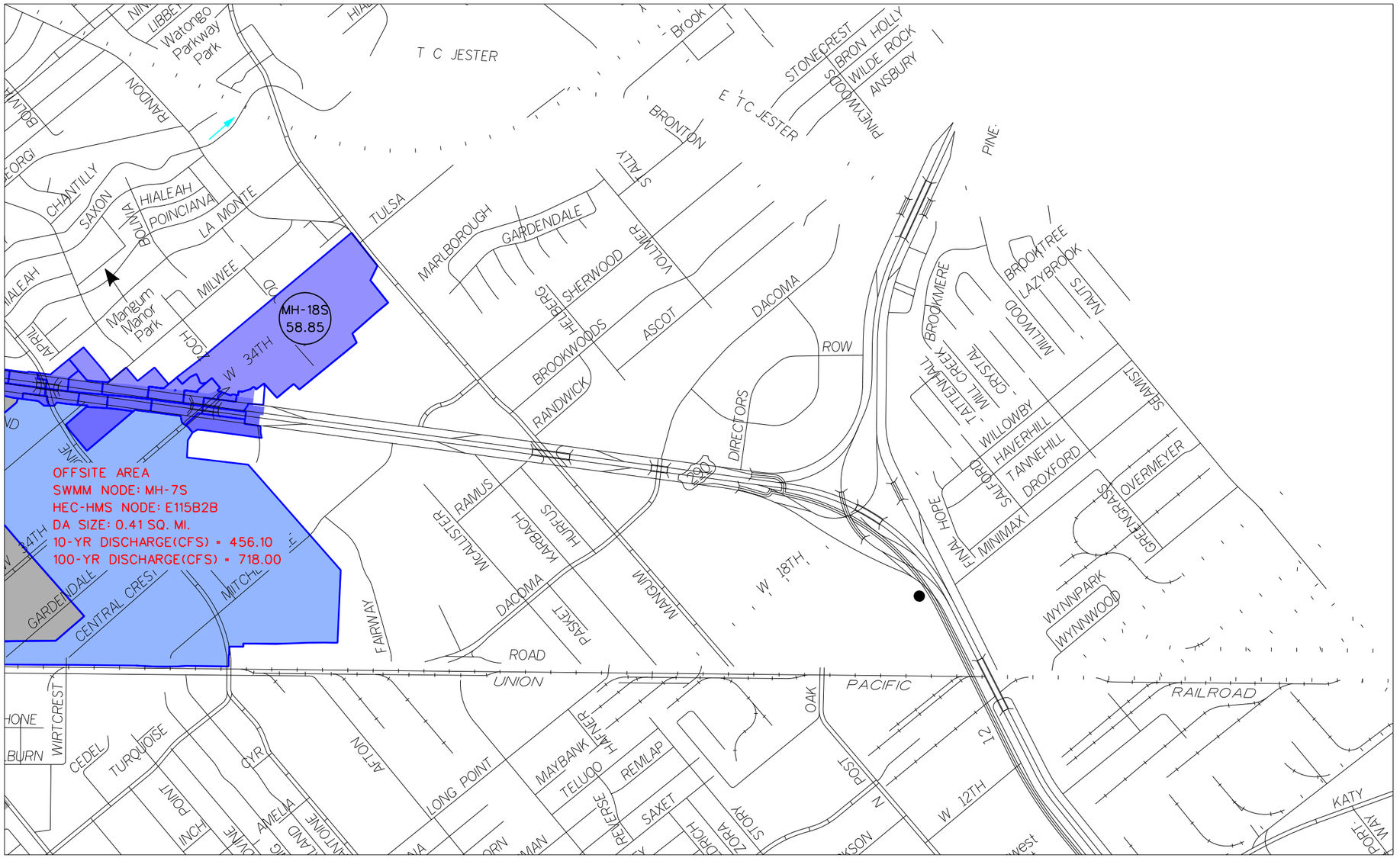
US 290 PMC

OVERALL EXISTING DRAINAGE AREA MAP

SHEET 4 OF 5

8/27/2009 | EXHIBIT 3

...\DRAINExist_Overall_04.dgn



LEGEND

LIGHTER COLOR	US 290 OFFSITE DRAINAGE AREA
DARKER COLOR	US 290 ONSITE DRAINAGE AREA
ML-03 4.49	DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)
→	FLOW DIRECTION

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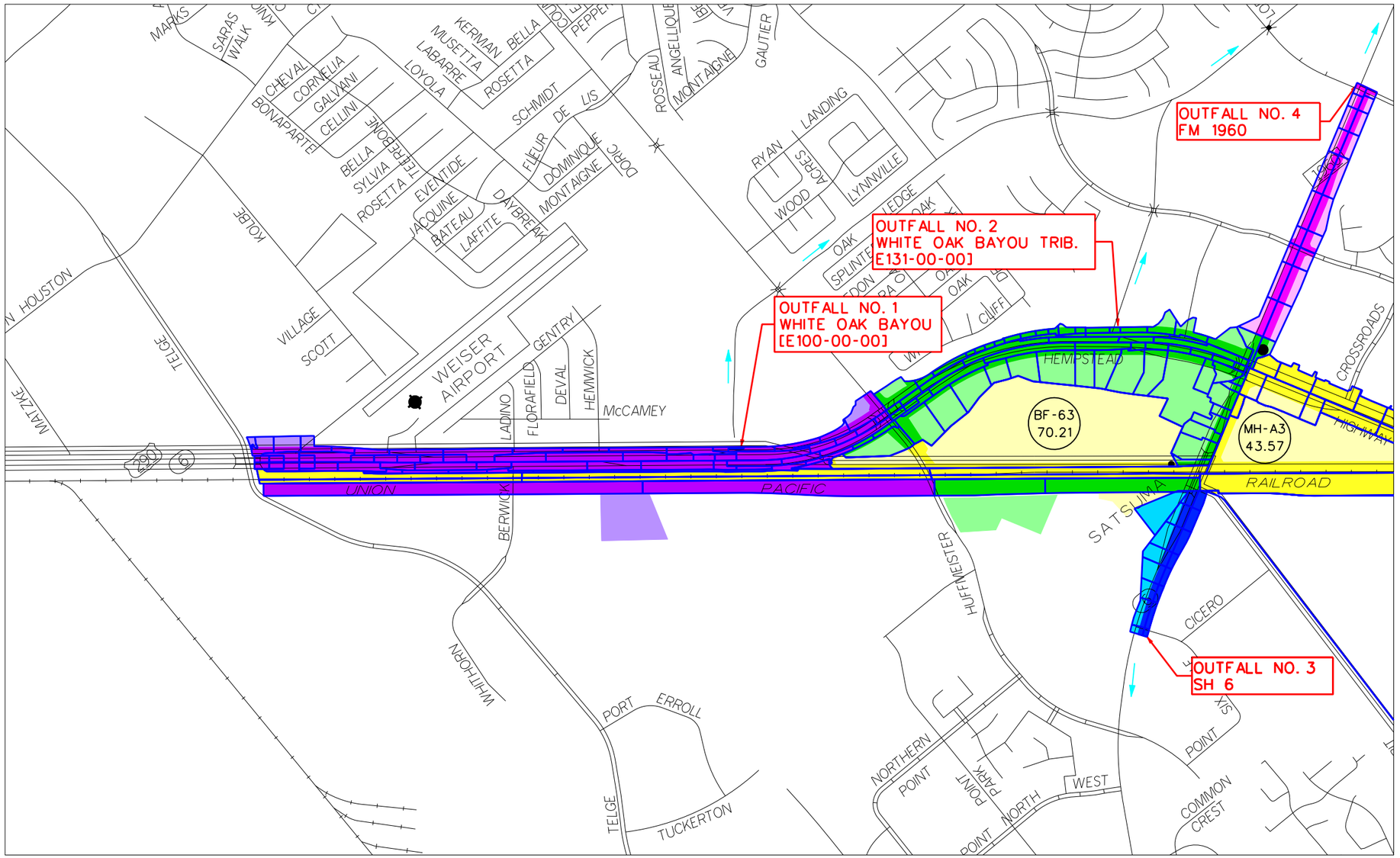
OVERALL EXISTING DRAINAGE AREA MAP

SHEET 5 OF 5

8/27/2009

EXHIBIT 3

...\DRA\Exist_Overall_05.dgn



LEGEND

LIGHTER COLOR	US 290 OFFSITE DRAINAGE AREA
DARKER COLOR	US 290 ONSITE DRAINAGE AREA
ML-03 4.49	DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)
→	FLOW DIRECTION

0 750 1500 3000

SCALE 1" = 1500'

PRELIMINARY
SUBJECT TO CHANGE

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US 290 PMC

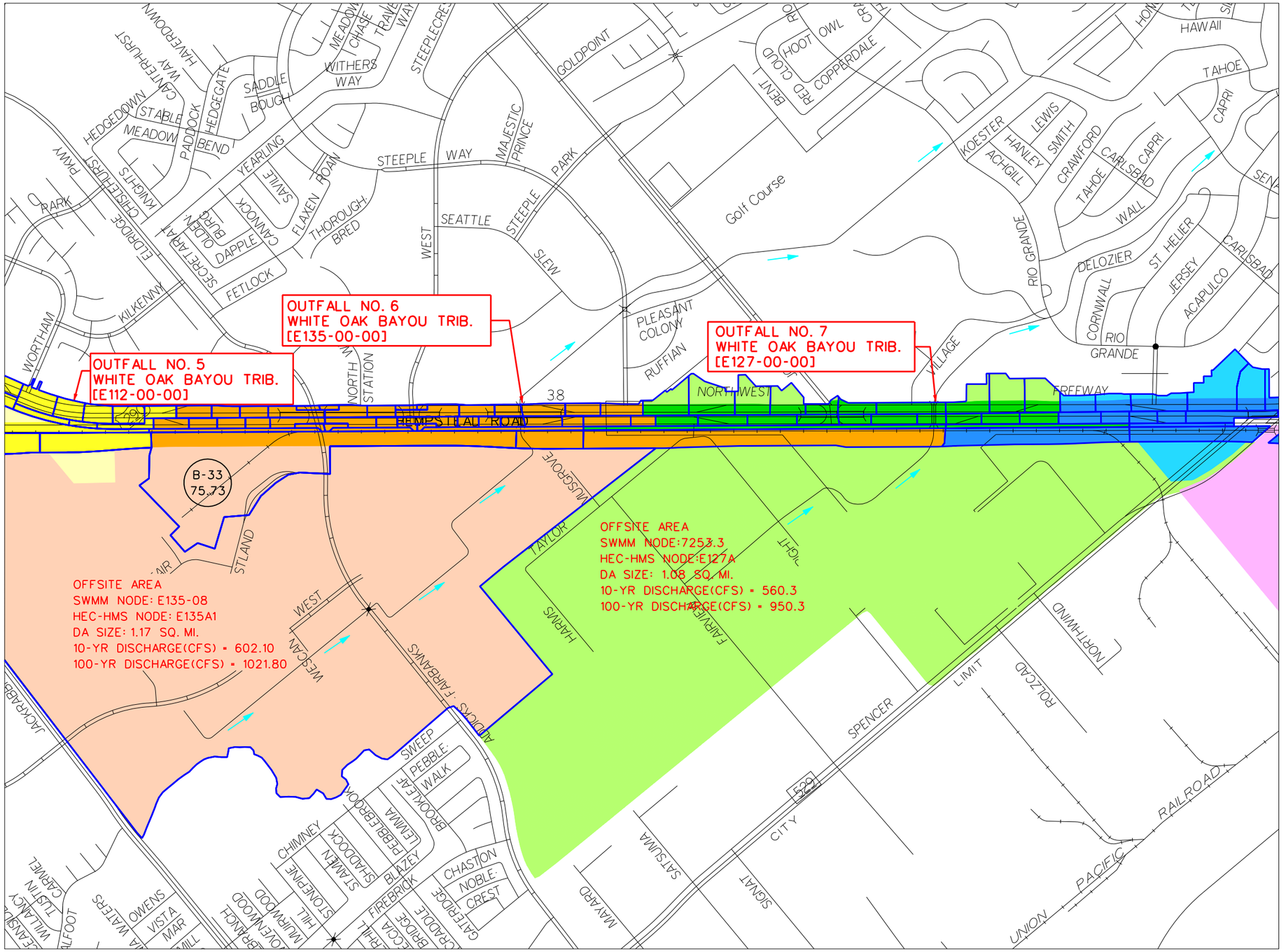
OVERALL PROPOSED DRAINAGE AREA MAP

SHEET 1 OF 5

8/27/2009

EXHIBIT 4

...\PHASEII\DRA\Overall_01.dgn



LEGEND

LIGHTER COLOR	US 290 OFFSITE DRAINAGE AREA
DARKER COLOR	US 290 ONSITE DRAINAGE AREA
ML-03 4.49	DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)
→	FLOW DIRECTION

0 750 1500 3000

SCALE 1" = 1500'

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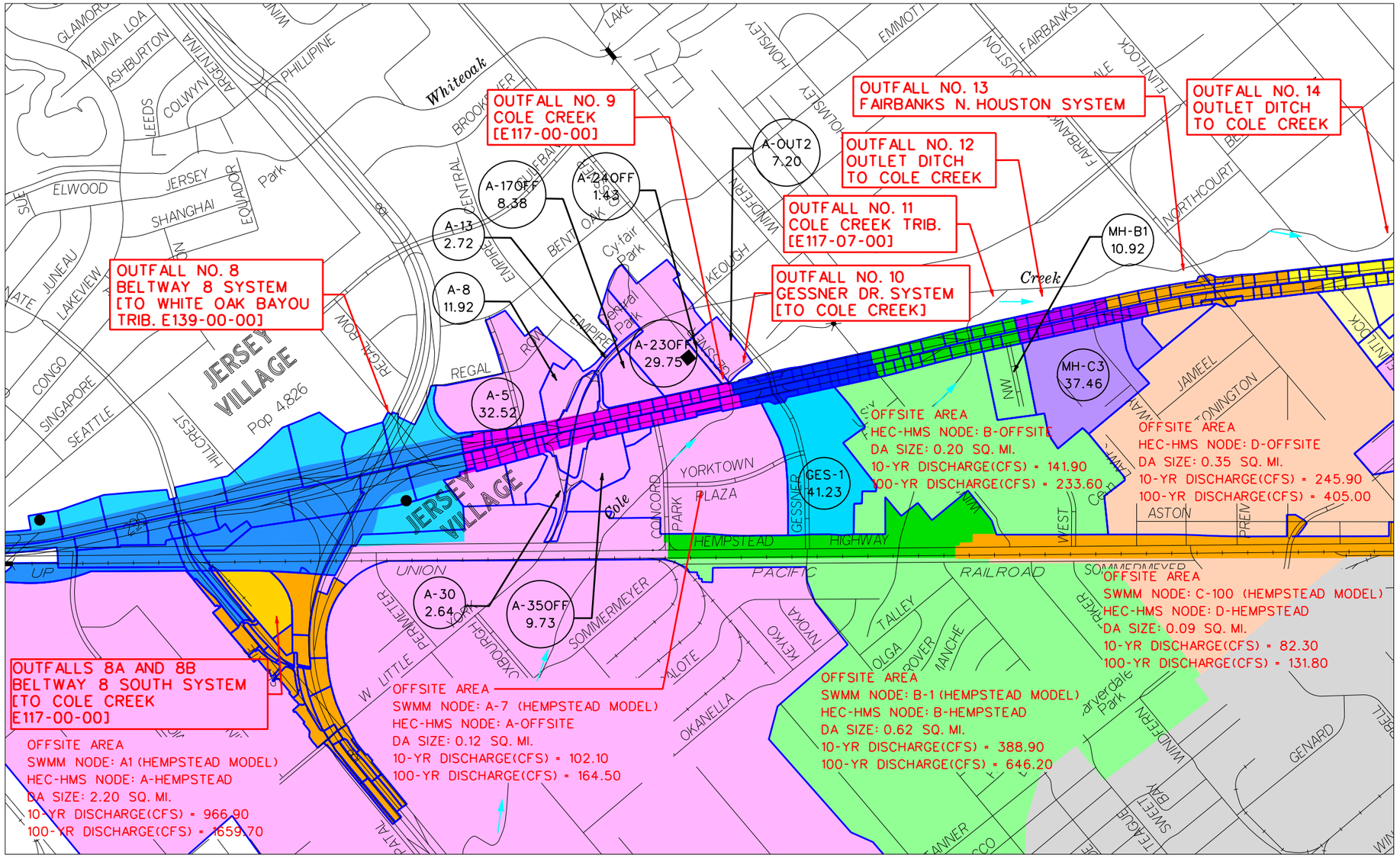
OVERALL PROPOSED DRAINAGE AREA MAP

SHEET 2 OF 5

8/27/2009 | EXHIBIT 4

...\PHASE II\DRA\Overall_02.dgn


OUTFALL NO. 9
COLE CREEK
[E117-00-00]
OUTFALL NO. 13
FAIRBANKS N. HOUSTON SYSTEM
OUTFALL NO. 14
OUTLET DITCH
TO COLE CREEK
OUTFALL NO. 12
OUTLET DITCH
TO COLE CREEK
OUTFALL NO. 11
COLE CREEK TRIB.
[E117-07-00]
OUTFALL NO. 10
GESSNER DR. SYSTEM
[TO COLE CREEK]
OUTFALL NO. 8
BELTWAY 8 SYSTEM
[TO WHITE OAK BAYOU
TRIB. E139-00-00]
A-OUT2
7.20
A-17OFF
8.38
A-24OFF
1.43
A-13
2.72
A-8
11.92
A-23OFF
29.75
A-5
32.52
MH-B1
10.92
MH-C3
37.46
GES-1
41.23
A-30
2.64
A-35OFF
9.73
JERSEY VILLAGE
Pop 4,826
Whiteoak
Bayou
Cole
Creek
OFFSITE AREA
HEC-HMS NODE: B-OFFSITE
DA SIZE: 0.20 SQ. MI.
10-YR DISCHARGE(CFS) = 141.90
100-YR DISCHARGE(CFS) = 233.60
OFFSITE AREA
HEC-HMS NODE: D-OFFSITE
DA SIZE: 0.35 SQ. MI.
10-YR DISCHARGE(CFS) = 245.90
100-YR DISCHARGE(CFS) = 405.00
OFFSITE AREA
SWMM NODE: C-100 (HEMPSTEAD MODEL)
HEC-HMS NODE: D-HEMPSTEAD
DA SIZE: 0.09 SQ. MI.
10-YR DISCHARGE(CFS) = 82.30
100-YR DISCHARGE(CFS) = 131.80
OFFSITE AREA
SWMM NODE: B-1 (HEMPSTEAD MODEL)
HEC-HMS NODE: B-HEMPSTEAD
DA SIZE: 0.62 SQ. MI.
10-YR DISCHARGE(CFS) = 388.90
100-YR DISCHARGE(CFS) = 646.20
OFFSITE AREA
SWMM NODE: A-7 (HEMPSTEAD MODEL)
HEC-HMS NODE: A-OFFSITE
DA SIZE: 0.12 SQ. MI.
10-YR DISCHARGE(CFS) = 102.10
100-YR DISCHARGE(CFS) = 164.50
OUTFALLS 8A AND 8B
BELTWAY 8 SOUTH SYSTEM
[TO COLE CREEK
E117-00-00]
OFFSITE AREA
SWMM NODE: A1 (HEMPSTEAD MODEL)
HEC-HMS NODE: A-HEMPSTEAD
DA SIZE: 2.20 SQ. MI.
10-YR DISCHARGE(CFS) = 966.90
100-YR DISCHARGE(CFS) = 1659.70
HEMPSTEAD HIGHWAY
UNION PACIFIC RAILROAD
W LITTLE YORK
YORKTOWN PLAZA
CONCORD PARK
GESSNER
WEST
ASTON
JAMEEL
WINDFERN
SOMMERMEYER
OKANELLA
NIKOKA
KEWKO
TALLEY
OLGA
ARROYO
RANCHE
GENARD
SWEETBAY
EAGLE
PERMLEER
NOTE:
1. FOR OUTFALL 9 THE OFFSITE INFLOW HYDROGRAPH AT NODE A-OUT1 IS EQUAL TO THE OUTFLOW HYDROGRAPH FROM NODE A-8 IN THE HEMPSTEAD SWMM MODEL
2. FOR OUTFALL 11 THE OFFSITE INFLOW HYDROGRAPH AT NODE MH-B8 IS EQUAL TO THE COMBINED HYROGRAPH FROM NODE B7 IN THE HEMPSTREAD SWMM MODEL WITH THE B-OFFSITE HYDROGRAPH
3. FOR OUTFALL 13 THE OFFSITE INFLOW HYDROGRAPH AT NODE MH-D2 IS EQAUL TO THE COMBINED HYROGRAPH FROM NODES C-7 AND FAI-7 IN THE HEMPSTREAD SWMM MODEL WITH THE D-OFFSITE HYDROGRAPH
LEGEND
LIGHTER COLOR
US 290 OFFSITE DRAINAGE AREA
DARKER COLOR
US 290 ONSITE DRAINAGE AREA
ML-03
4.49
DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)
FLOW DIRECTION
0
750
1500
3000
SCALE 1" = 1500'
PRELIMINARY
SUBJECT TO CHANGE
COMMUNITY 290 DRIVEN
Program Office
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Houston, Texas 77092
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OVERALL PROPOSED DRAINAGE AREA MAP
SHEET 3 OF 5
2/28/2012
EXHIBIT 4
...\DRA\Overall_03-BW8rev.dgn

OUTFALL NO. 15
OUTLET DITCH
TO COLE CREEK

OUTFALL NO. 16
HOLLISTER DR. SYSTEM

OUTFALL NO. 17
LANGFIELD ST.
[TO BRICKHOUSE GULLY
TRIB. E115-04-00]

OUTFALL NO. 18
PINEMONT DR. SYSTEM

OUTFALL NO. 19
BINGLE RD. SYSTEM

OUTFALL NO. 20
W. 43RD ST. SYSTEM
[TO BRICKHOUSE
GULLY TRIB.]

OUTFALL NO. 21
HEWITT DR. OUTFALL
[TO E515-01-00]

OUTFALL NO. 22
BRICKHOUSE GULLY
[E115-00-00]

E-340FF
16.47

MH-G3
55.33

CNT-01
48.99

CNT-02
34.79

BNGL-01
24.98

W43RD
53.06

COH01
57.50

MH-F1
133.75

OFFSITE AREA
SWMM NODE: E11504.3
HEC-HMS NODE: E1150400_0001_J
DA SIZE: 1.82 SQ. MI.
10-YR DISCHARGE(CFS) = 977.30
100-YR DISCHARGE(CFS) = 2240.40

OFFSITE AREA
SWMM NODE: BRCKH01.3
HEC-HMS NODE: E1150000_0074_J
DA SIZE: 8.21 SQ. MI.
10-YR DISCHARGE(CFS) = 4507.00
100-YR DISCHARGE(CFS) = 6112.40

N

LEGEND

LIGHTER COLOR	US 290 OFFSITE DRAINAGE AREA
DARKER COLOR	US 290 ONSITE DRAINAGE AREA
ML-03 4.49	DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)
→	FLOW DIRECTION

0 750 1500 3000

SCALE 1" = 1500'

PRELIMINARY
SUBJECT TO CHANGE

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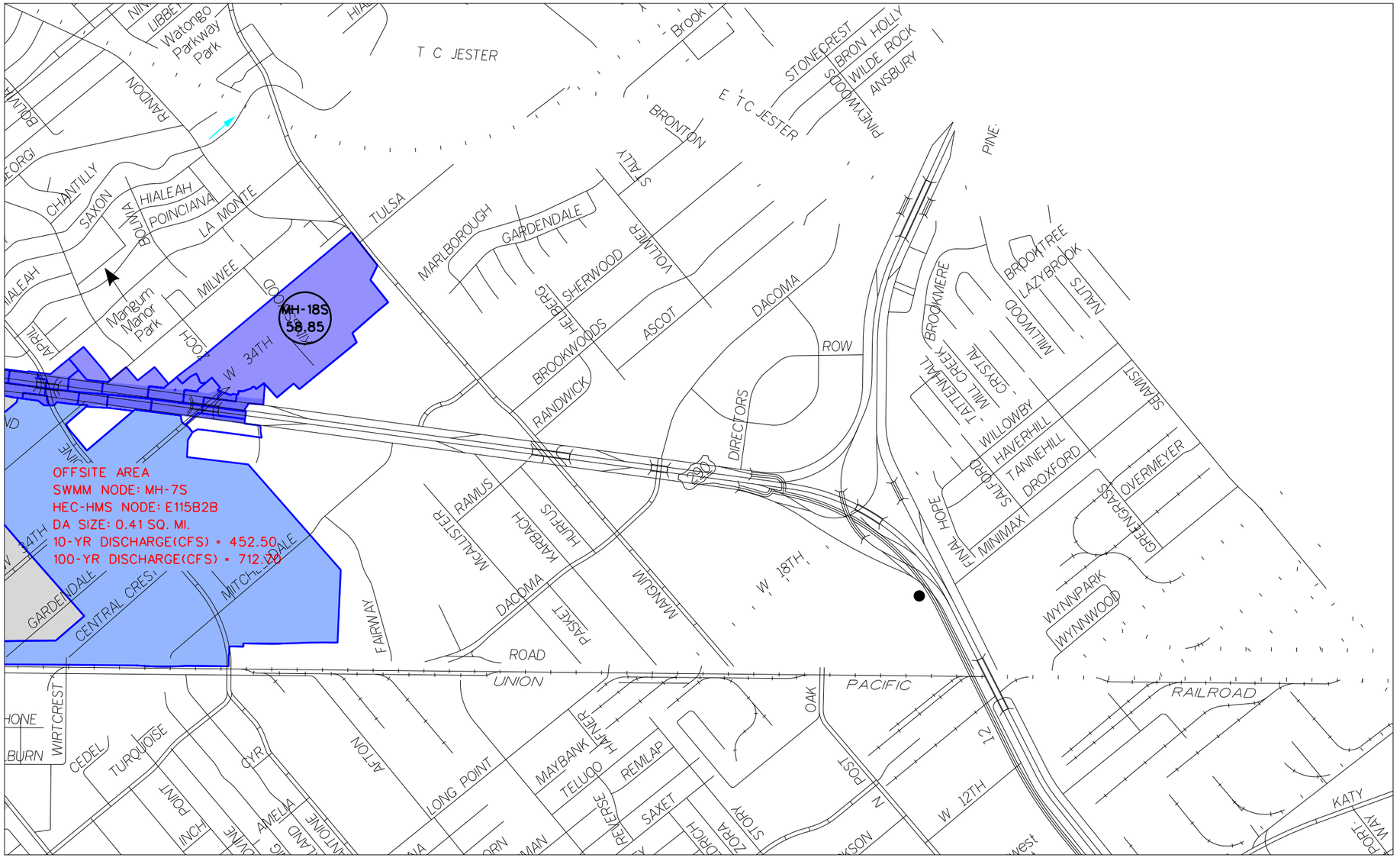
OVERALL PROPOSED DRAINAGE AREA MAP

SHEET 4 OF 5

8/27/2009 | EXHIBIT 4

...\PHASE1\DRA\Overall_04.dgn



LEGEND

LIGHTER COLOR	US 290 OFFSITE DRAINAGE AREA
DARKER COLOR	US 290 ONSITE DRAINAGE AREA
ML-03 4.49	DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)
→	FLOW DIRECTION

0 750 1500 3000

SCALE 1" = 1500'

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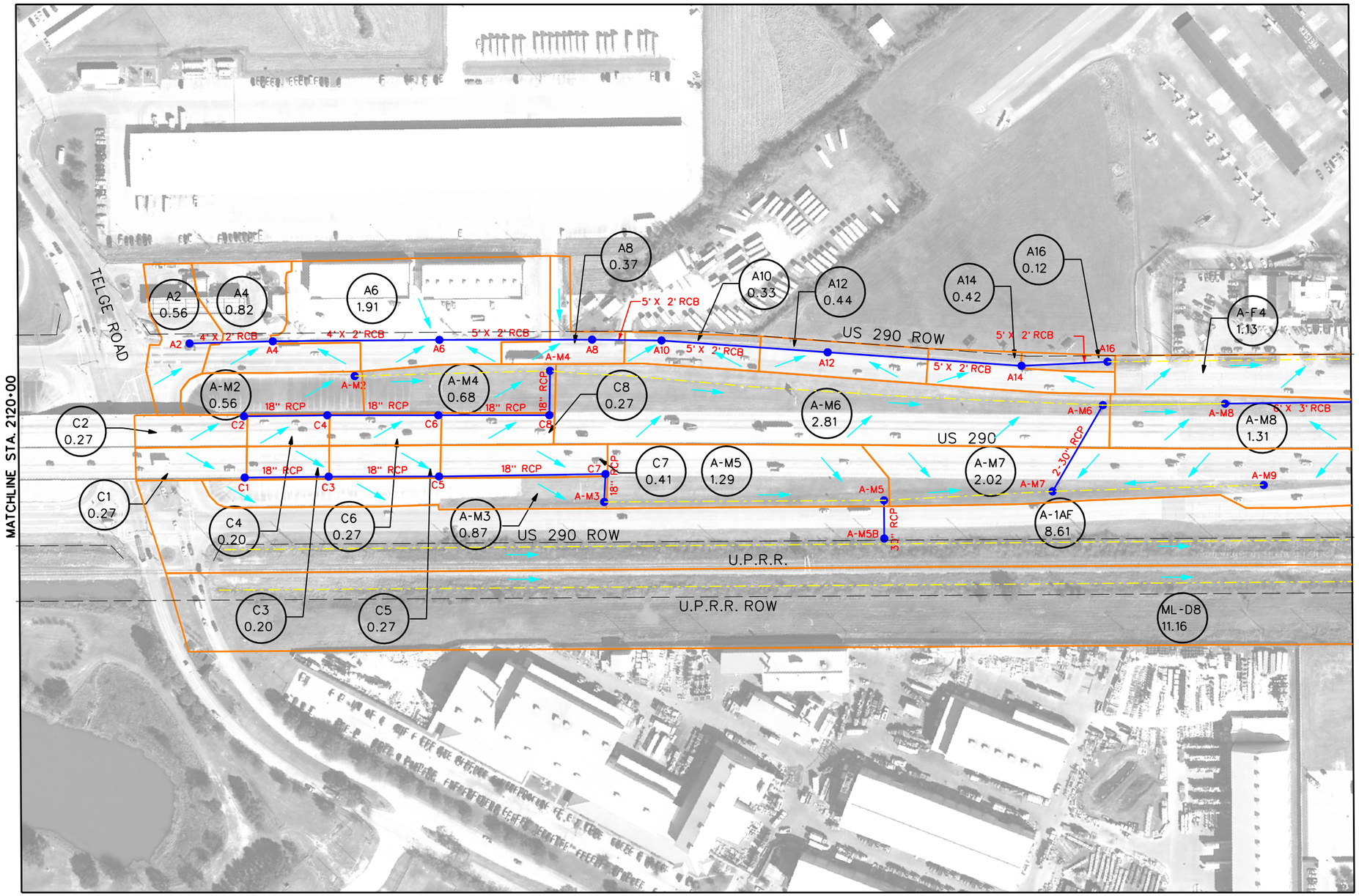
OVERALL PROPOSED DRAINAGE AREA MAP

SHEET 5 OF 5

8/27/2009

EXHIBIT 4

...\PHASEII\DRA\Overall_05.dgn



LEGEND

- DRAINAGE AREA BOUNDARY
- EXIST. STM SWR/CULVERTS
- EXIST. CHANNEL/DITCH
- INLET/MH (ANALYSIS NODE)
- SHEET FLOW DIRECTION
- ML-03 4.49 — DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)

0 100 200 400

SCALE (H) 1" = 200'

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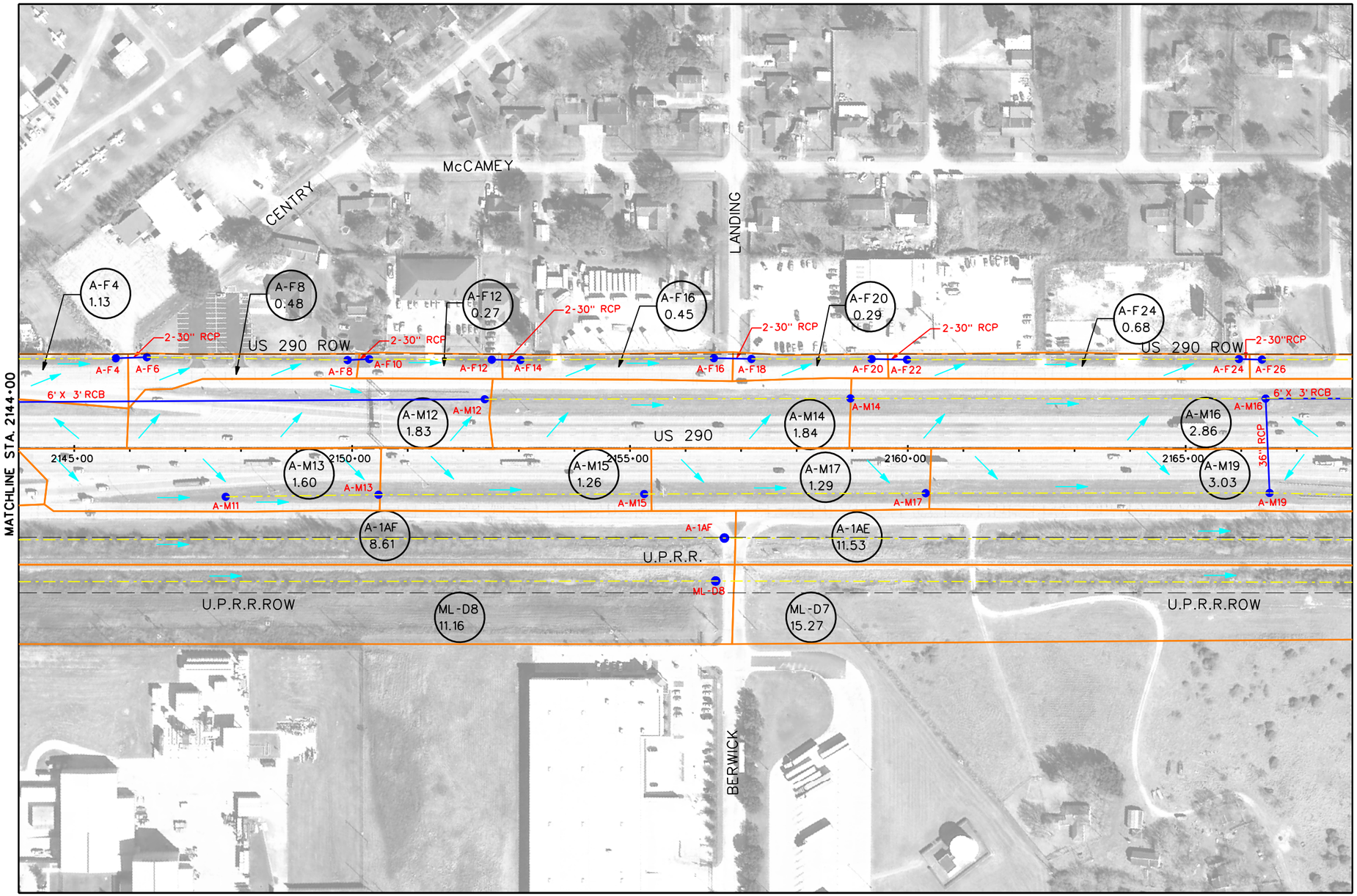
EXISTING DRAINAGE AREA MAP

SHEET 1 OF 36

8/27/2009

EXHIBIT 5

...\Phase1\DRA\Existing_01.dgn



LEGEND

- DRAINAGE AREA BOUNDARY
- EXIST. STM SWR/CULVERTS
- EXIST. CHANNEL/DITCH
- INLET/MH (ANALYSIS NODE)
- SHEET FLOW DIRECTION
- ML-03 4.49 — DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)

0 100 200 400

SCALE (H) 1" = 200'
(V) 1" = 10'

PRELIMINARY
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EXISTING DRAINAGE AREA MAP

SHEET 2 OF 36

8/27/2009

EXHIBIT 5

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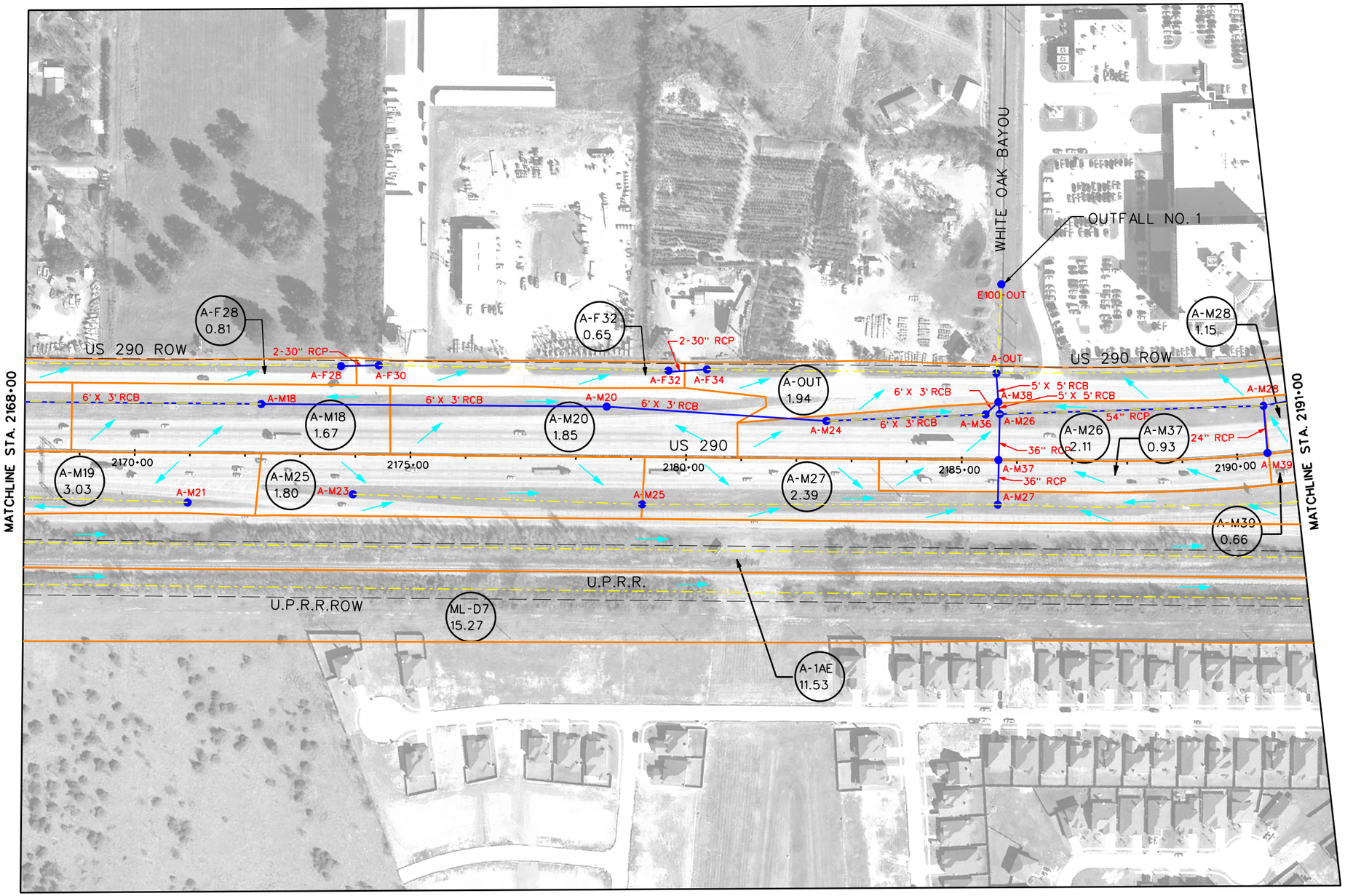

LEGEND

- DRAINAGE AREA BOUNDARY
- EXIST. STM SWR/CULVERTS
- EXIST. CHANNEL/DITCH
- INLET/MH (ANALYSIS NODE)
- SHEET FLOW DIRECTION
- ML-03 4.49 — DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)

0 100 200 400

SCALE (H) 1" = 200'

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EXISTING DRAINAGE AREA MAP

SHEET 3 OF 36

8/27/2009

EXHIBIT 5

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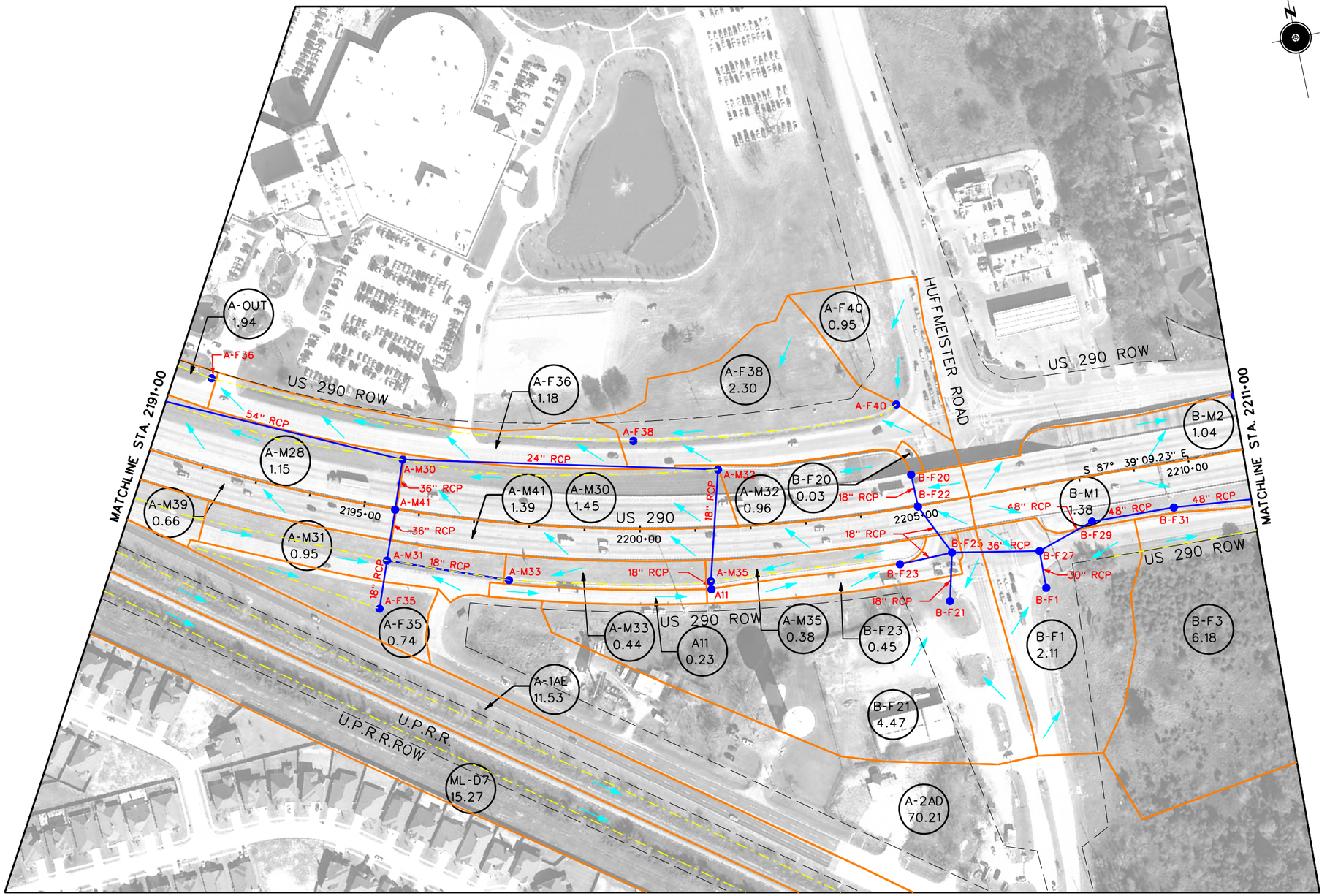

MATCHLINE A-A

LEGEND

- DRAINAGE AREA BOUNDARY
- EXIST. STM SWR/CULVERTS
- EXIST. CHANNEL/DITCH
- INLET/MH (ANALYSIS NODE)
- SHEET FLOW DIRECTION
- ML-03 4.49 — DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)

0 100 200 400

SCALE (H) 1" = 200'

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EXISTING DRAINAGE AREA MAP

SHEET 4 OF 36

8/27/2009

EXHIBIT 5

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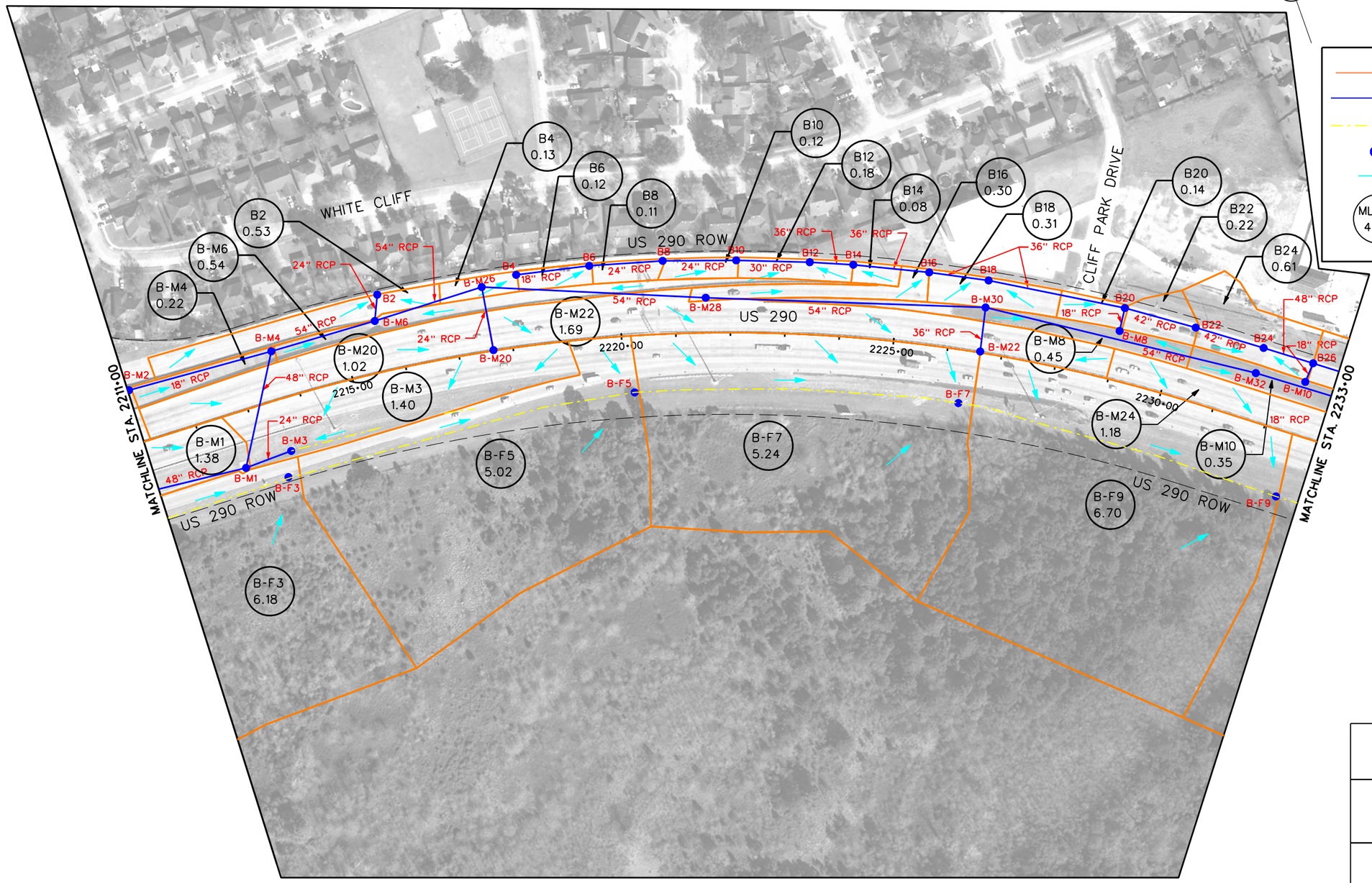

MATCHLINE A-A

LEGEND

- DRAINAGE AREA BOUNDARY
- EXIST. STM SWR/CULVERTS
- EXIST. CHANNEL/DITCH
- INLET/MH (ANALYSIS NODE)
- SHEET FLOW DIRECTION
- ML-03 4.49 — DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)

0 100 200 400

SCALE (H) 1" = 200'

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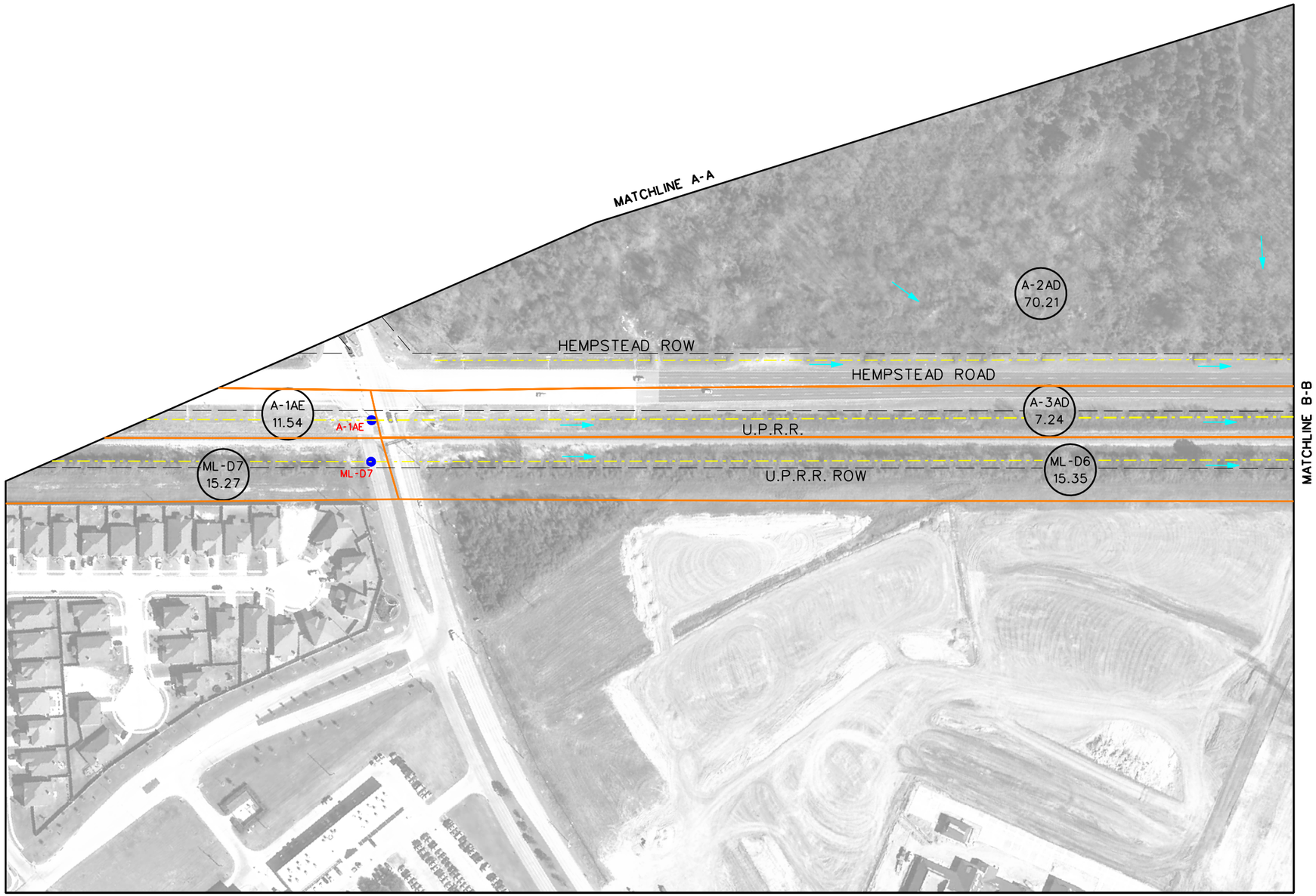
EXISTING DRAINAGE AREA MAP

SHEET 5 OF 36

8/27/2009

EXHIBIT 5

...\phase1\dra\Existing_05.dgn



LEGEND

- DRAINAGE AREA BOUNDARY
- EXIST. STM SWR/CULVERTS
- EXIST. CHANNEL/DITCH
- INLET/MH (ANALYSIS NODE)
- SHEET FLOW DIRECTION
- ML-03 4.49 — DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)

0 100 200 400

SCALE (H) 1" = 200'

PRELIMINARY
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EXISTING DRAINAGE AREA MAP

SHEET 5A OF 36

8/27/2009

EXHIBIT 5

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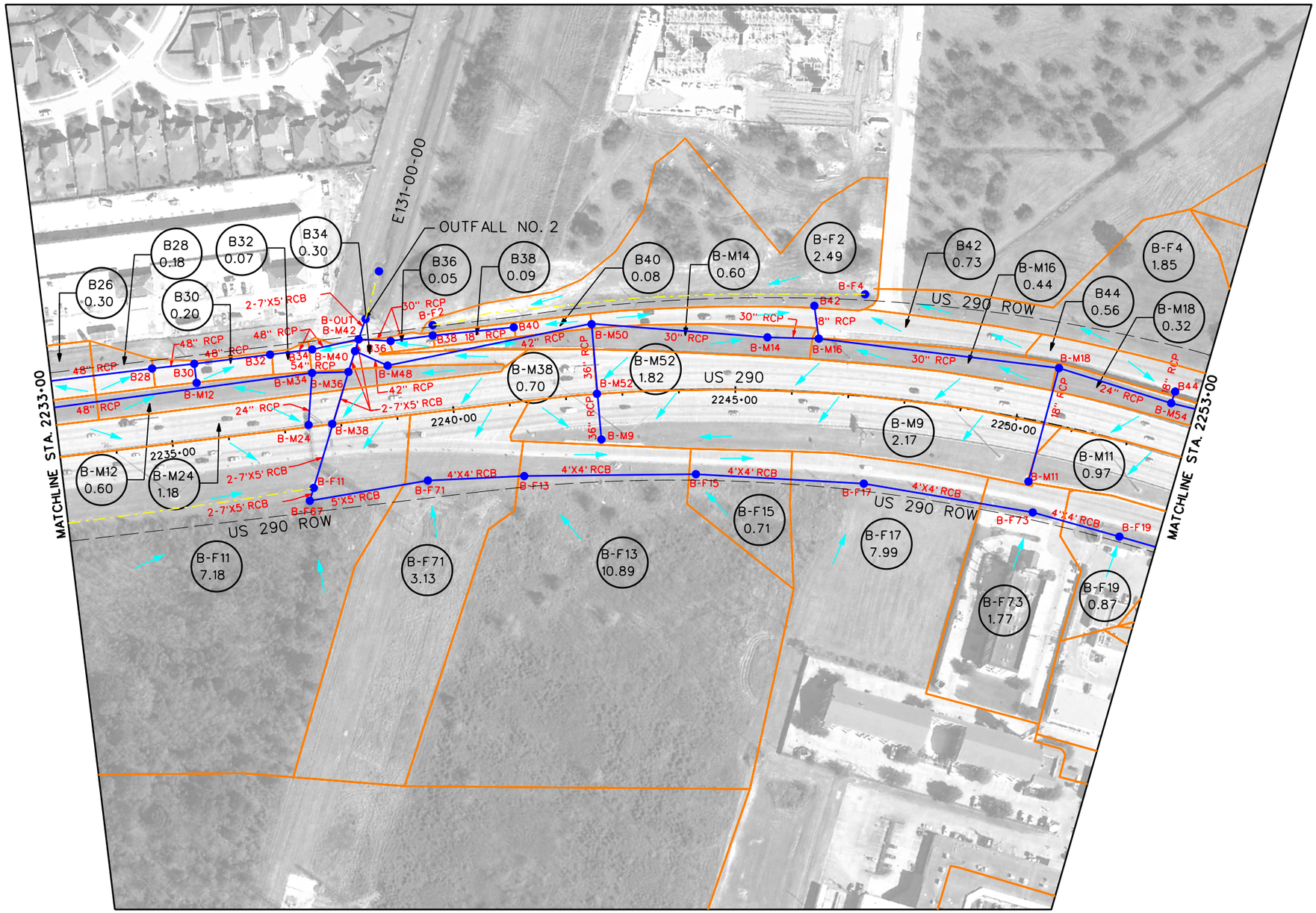

MATCHLINE C-C

LEGEND

- DRAINAGE AREA BOUNDARY
- EXIST. STM SWR/CULVERTS
- EXIST. CHANNEL/DITCH
- INLET/MH (ANALYSIS NODE)
- SHEET FLOW DIRECTION
- ML-03 4.49 — DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)

0 100 200 400

SCALE (H) 1" = 200'

PRELIMINARY
SUBJECT TO CHANGE

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EXISTING DRAINAGE AREA MAP

SHEET 6 OF 36

11/4/2009

EXHIBIT 5

...\Phase II\DRA\Existing_06.dgn

MATCHLINE C-C

MATCHLINE B-B

MATCHLINE D-D

SEE EXISTING DRAINAGE AREA MAP
SHEETS 33-34 FOR SH 6 AND FM 1960
DRAINAGE INFORMATION

A-2AD
70.21

A-3AD
7.24

ML-D6
15.35

HEMPSTEAD ROW

HEMPSTEAD ROAD

U.P.R.R.

U.P.R.R. ROW

FM 1960

SH 6

B-F43
B-F51
B-F53
B-F55
B-F57
B-F59
B-F61
A-2AD
36" RCP
A-3AD
A-1AD
8'X4' RCB
A-1AC
ML-D6
8'X4' RCB
ML-D5
F-1
F-2
F-3
F-4
F-5
F-6
F-7
F-8
F-10

LEGEND

- DRAINAGE AREA BOUNDARY
- EXIST. STM SWR/CULVERTS
- EXIST. CHANNEL/DITCH
- INLET/MH (ANALYSIS NODE)
- SHEET FLOW DIRECTION
- ML-03 4.49 — DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)

0 100 200 400
SCALE (H) 1" = 200'

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EXISTING DRAINAGE AREA MAP

SHEET 6A OF 36

8/27/2009

EXHIBIT 5

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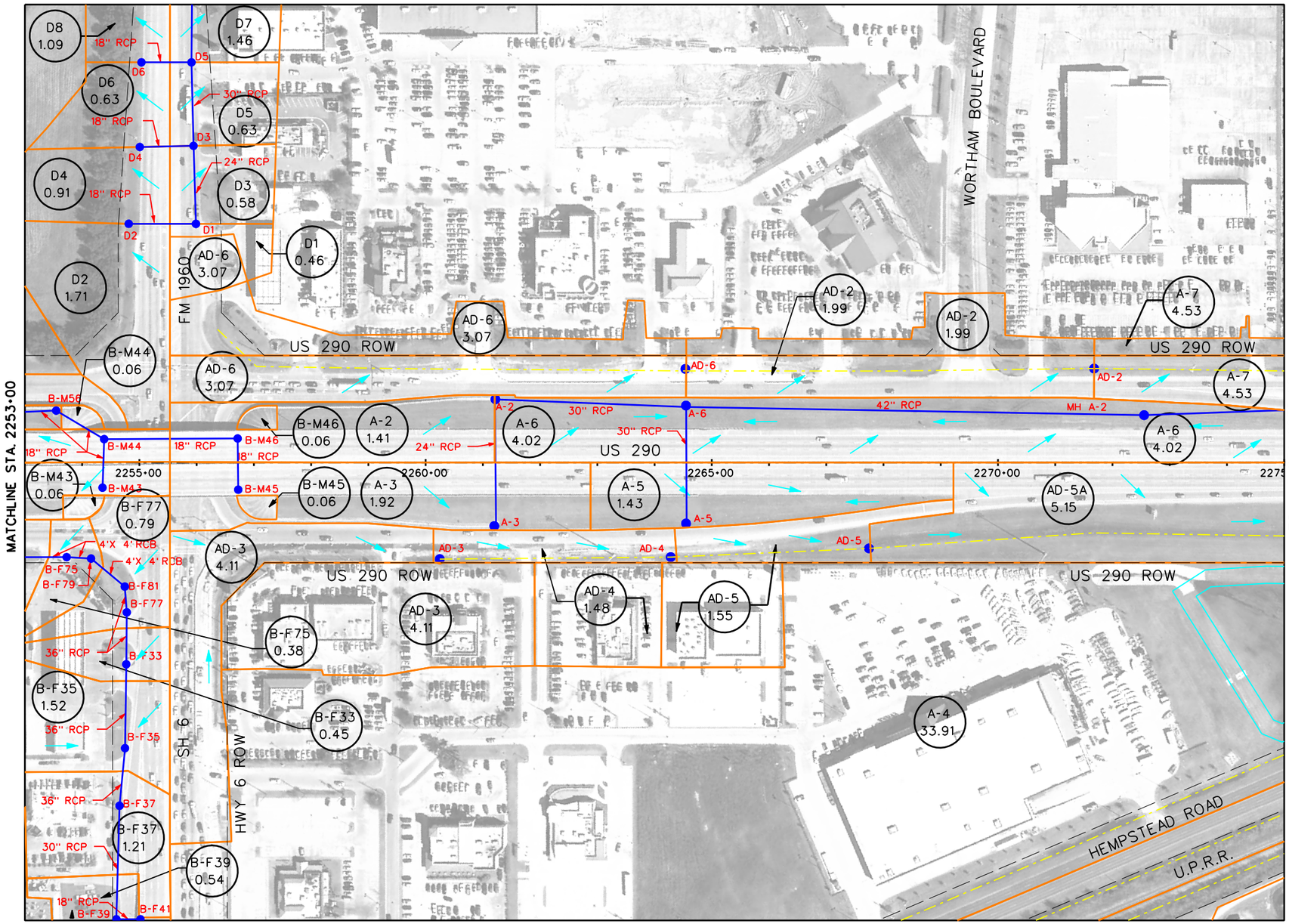

LEGEND

- DRAINAGE AREA BOUNDARY
- EXIST. STM SWR/CULVERTS
- EXIST. CHANNEL/DITCH
- INLET/MH (ANALYSIS NODE)
- SHEET FLOW DIRECTION
- ML-03 4.49 — DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)

0 100 200 400

SCALE (H) 1" = 200'

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EXISTING DRAINAGE AREA MAP

SHEET 7 OF 36

8/27/2009

EXHIBIT 5

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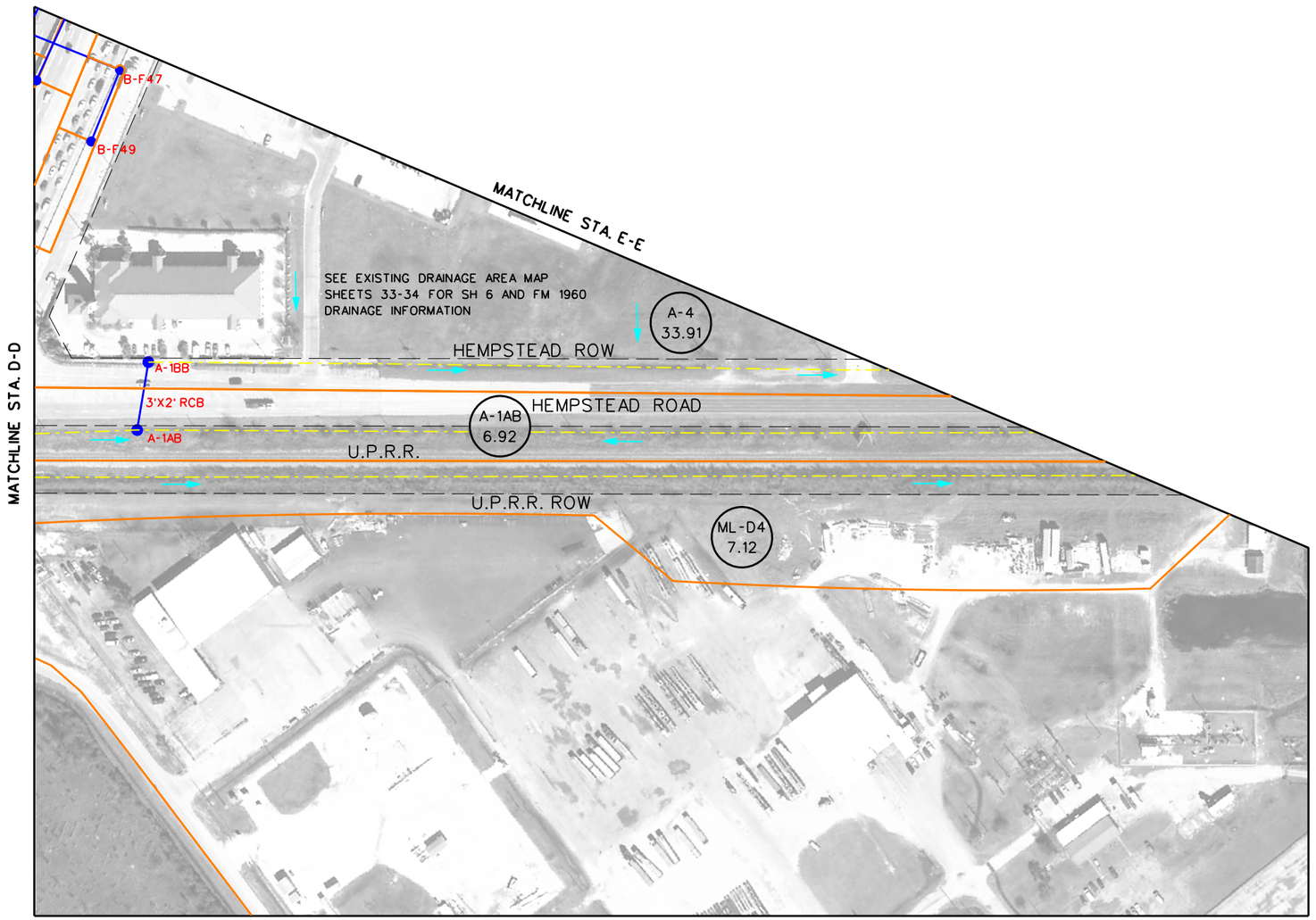

LEGEND

- DRAINAGE AREA BOUNDARY
- EXIST. STM SWR/CULVERTS
- EXIST. CHANNEL/DITCH
- INLET/MH (ANALYSIS NODE)
- SHEET FLOW DIRECTION
- ML-03 4.49 — DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)

0 100 200 400

SCALE (H) 1" = 200'

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EXISTING DRAINAGE AREA MAP

SHEET 7A OF 36

8/27/2009

EXHIBIT 5

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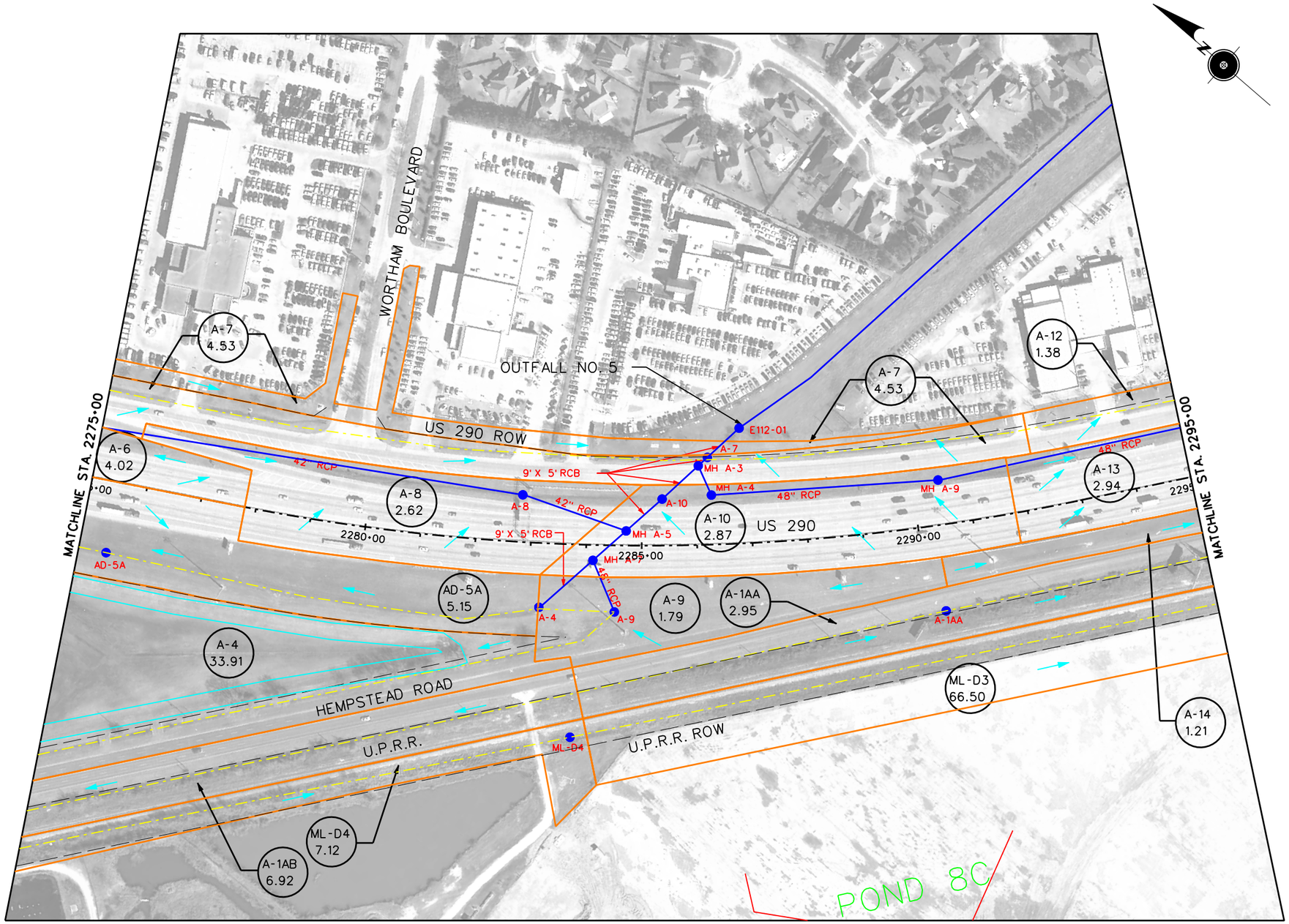

LEGEND

- DRAINAGE AREA BOUNDARY
- EXIST. STM SWR/CULVERTS
- EXIST. CHANNEL/DITCH
- INLET/MH (ANALYSIS NODE)
- SHEET FLOW DIRECTION
- ML-03 4.49 — DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)

0 100 200 400

SCALE (H) 1" = 200'
(V) 1" = 10'

PRELIMINARY
SUBJECT TO CHANGE

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EXISTING DRAINAGE AREA MAP

SHEET 8 OF 36

8/27/2009

EXHIBIT 5

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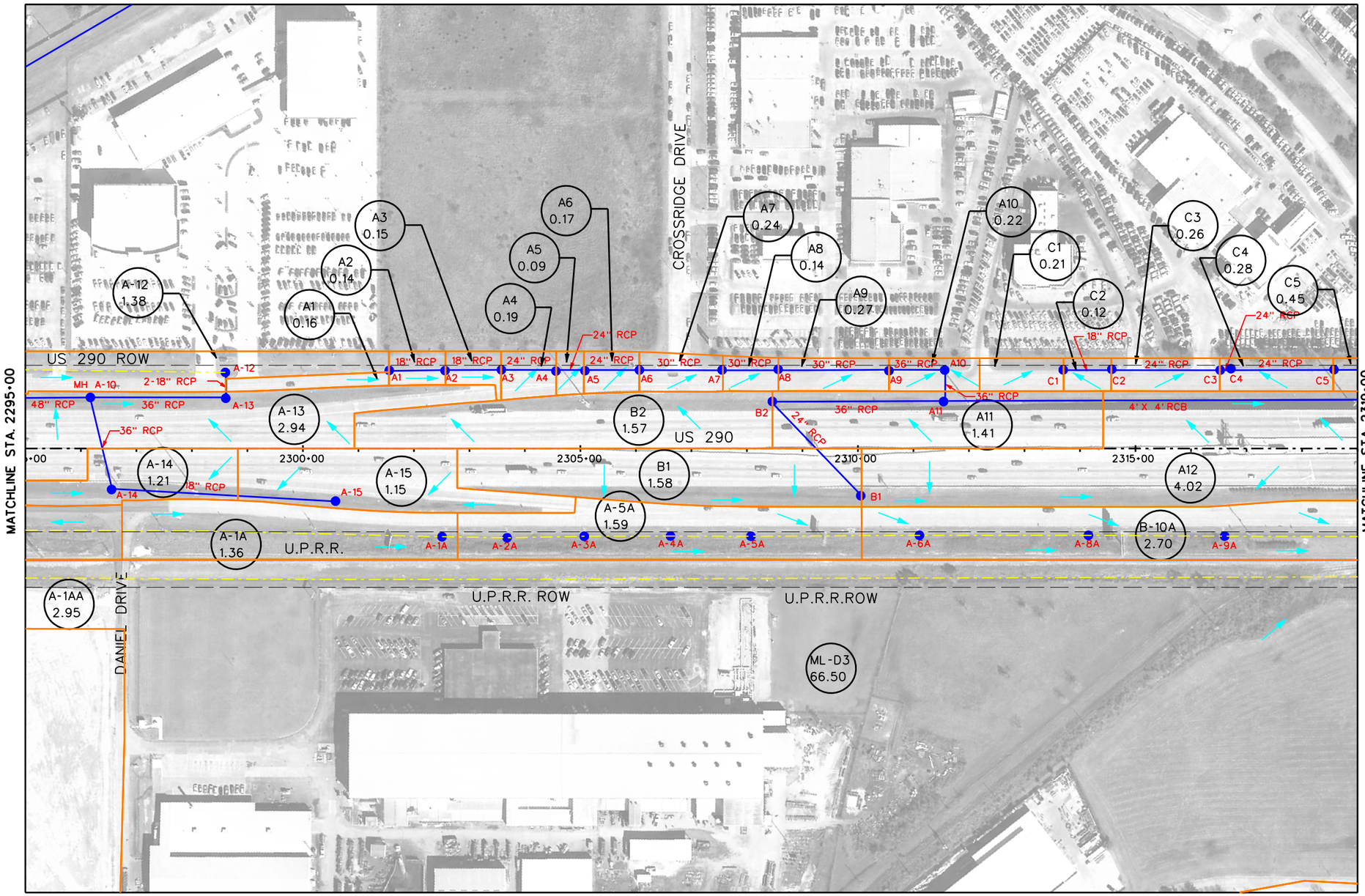

LEGEND

- DRAINAGE AREA BOUNDARY
- EXIST. STM SWR/CULVERTS
- EXIST. CHANNEL/DITCH
- INLET/MH (ANALYSIS NODE)
- SHEET FLOW DIRECTION
- ML-03 4.49 — DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)

0 100 200 400

SCALE (H) 1" = 200'

PRELIMINARY
SUBJECT TO CHANGE

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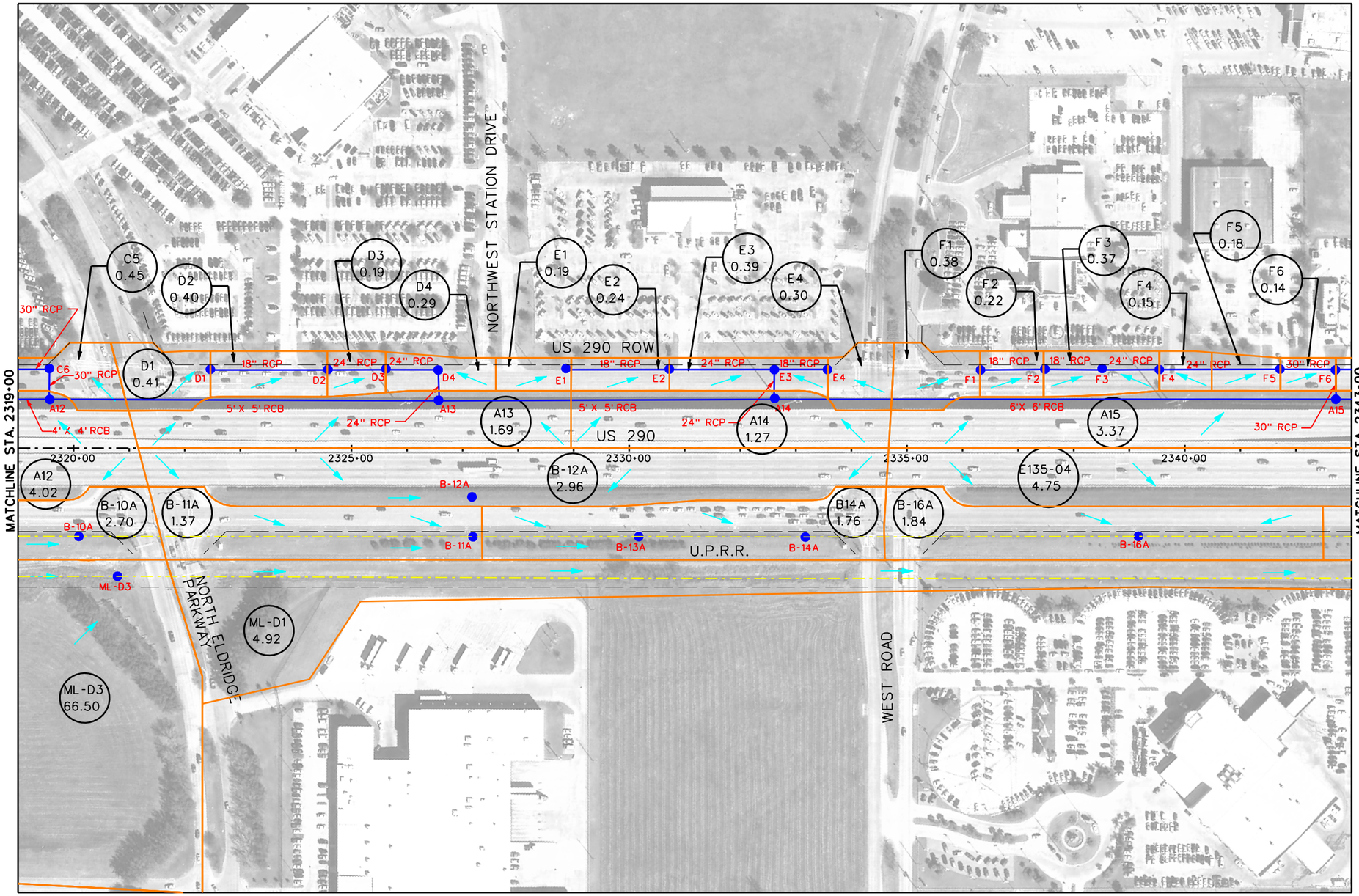
EXISTING DRAINAGE AREA MAP

SHEET 9 OF 36

8/27/2009

EXHIBIT 5

...\phase1\dra\Existing_09.dgn



LEGEND

- DRAINAGE AREA BOUNDARY
- EXIST. STM SWR/CULVERTS
- EXIST. CHANNEL/DITCH
- INLET/MH (ANALYSIS NODE)
- SHEET FLOW DIRECTION
- ML-03 4.49 — DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)

0 100 200 400

SCALE (H) 1" = 200'
(V) 1" = 10'

PRELIMINARY
SUBJECT TO CHANGE

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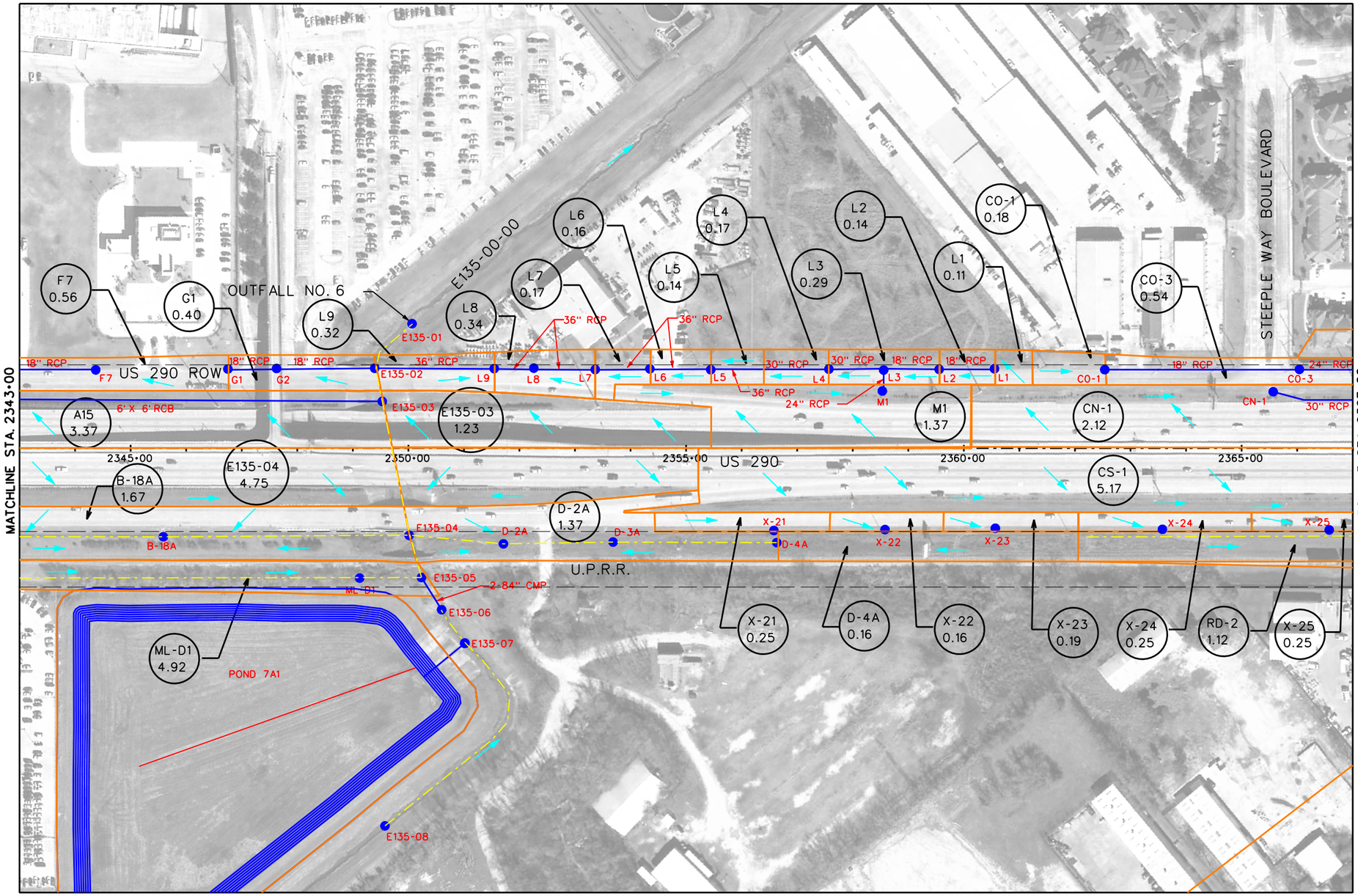
EXISTING DRAINAGE AREA MAP

SHEET 10 OF 36

8/27/2009

EXHIBIT 5

...\phase1\dra\Existing_10.dgn



LEGEND

- DRAINAGE AREA BOUNDARY
- EXIST. STM SWR/CULVERTS
- EXIST. CHANNEL/DITCH
- INLET/MH (ANALYSIS NODE)
- SHEET FLOW DIRECTION
- ML-03 4.49 — DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)

0 100 200 400

SCALE (H) 1" = 200'

PRELIMINARY
SUBJECT TO CHANGE

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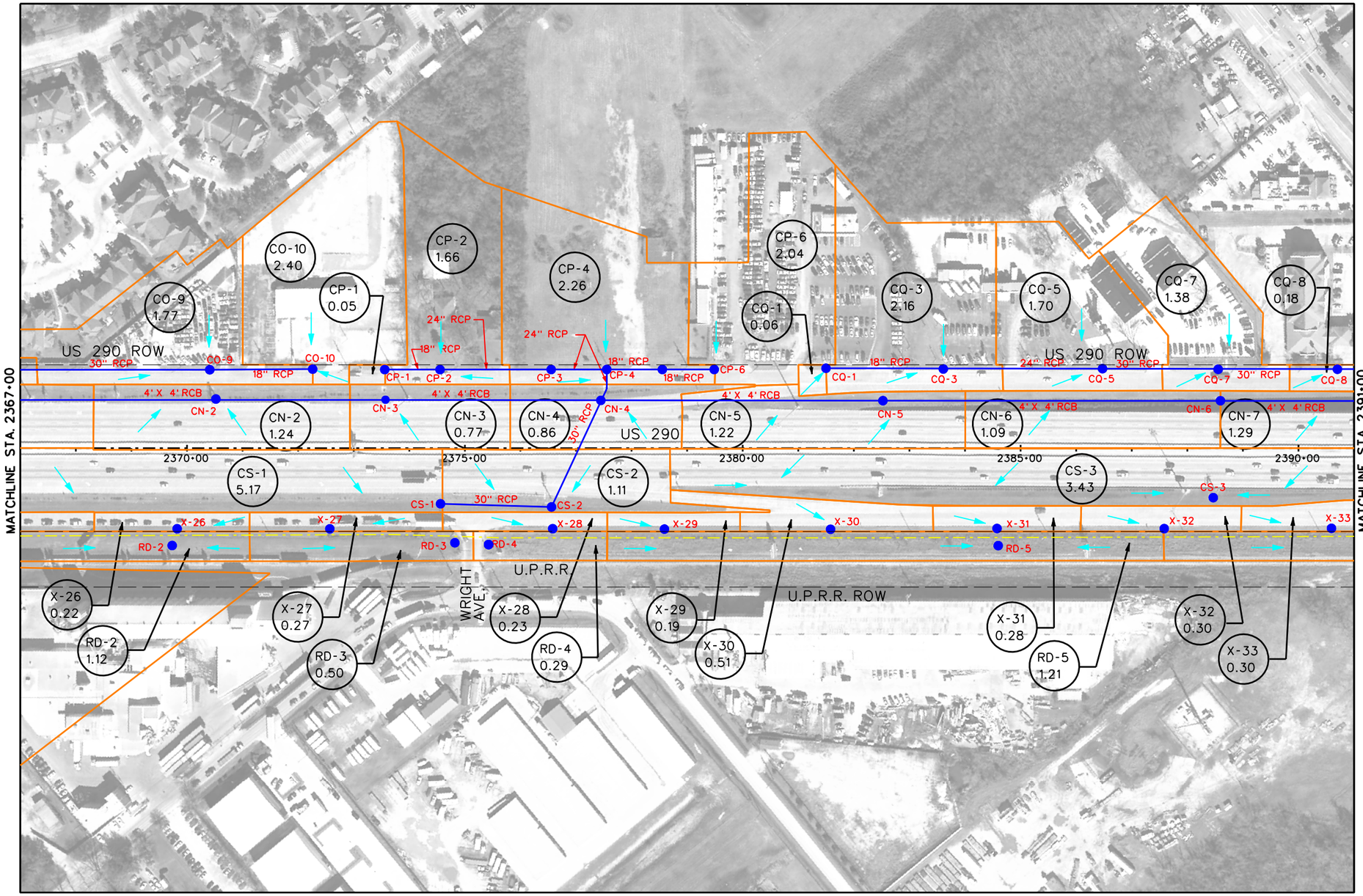
EXISTING DRAINAGE AREA MAP

SHEET 11 OF 36

8/27/2009

EXHIBIT 5

...\phase1\dra\Existing_11.dgn



LEGEND

- DRAINAGE AREA BOUNDARY
- EXIST. STM SWR/CULVERTS
- EXIST. CHANNEL/DITCH
- INLET/MH (ANALYSIS NODE)
- SHEET FLOW DIRECTION
- ML-03 4.49 — DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)

0 100 200 400

SCALE (H) 1" = 200'
(V) 1" = 10'

PRELIMINARY
SUBJECT TO CHANGE

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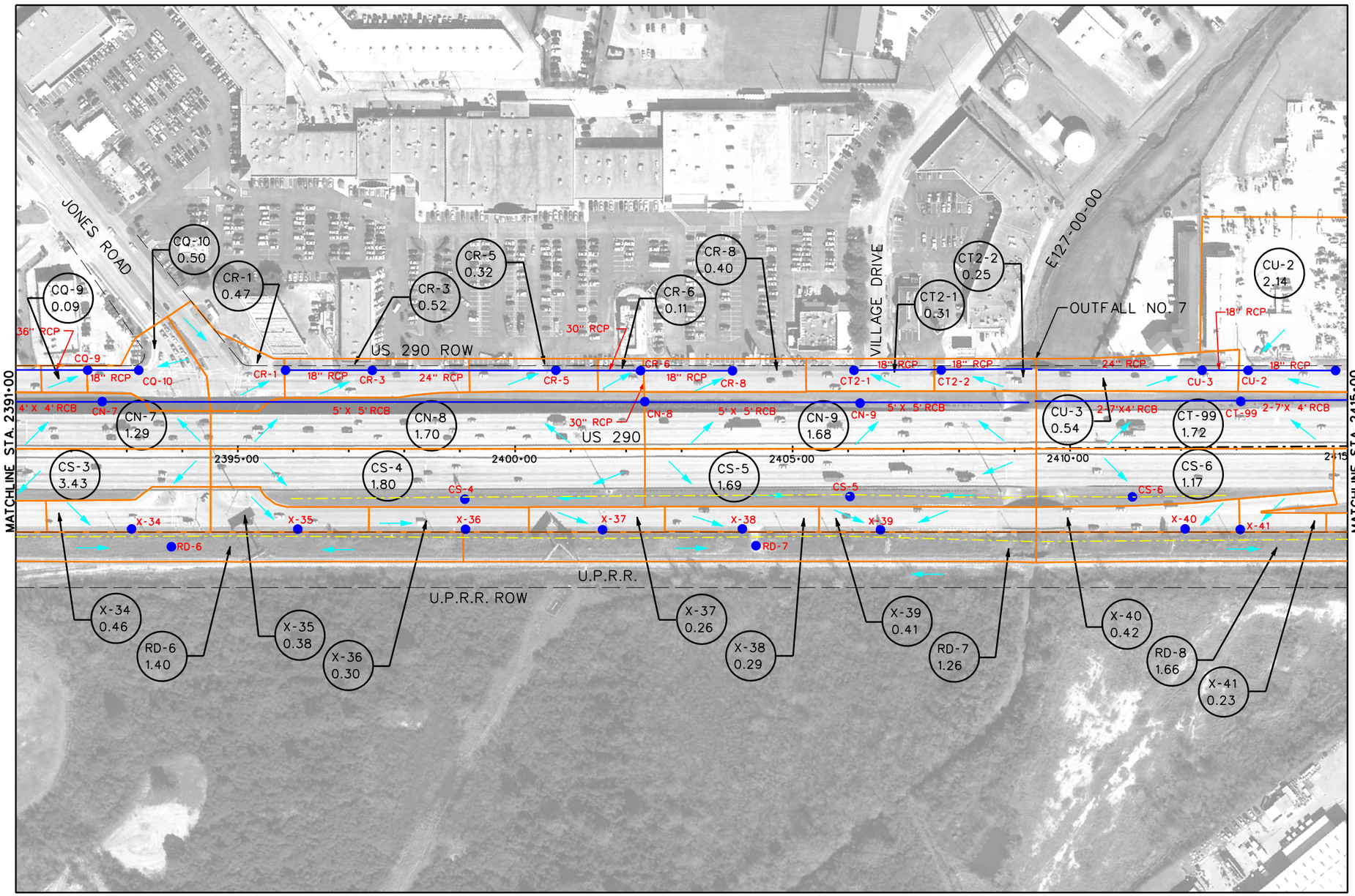
EXISTING DRAINAGE AREA MAP

SHEET 12 OF 36

8/27/2009

EXHIBIT 5

...\phase1\dra\Existing_12.dgn



LEGEND

- DRAINAGE AREA BOUNDARY
- EXIST. STM SWR/CULVERTS
- EXIST. CHANNEL/DITCH
- INLET/MH (ANALYSIS NODE)
- SHEET FLOW DIRECTION
- ML-03 4.49 — DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)

0 100 200 400

SCALE (H) 1" = 200'

PRELIMINARY
SUBJECT TO CHANGE

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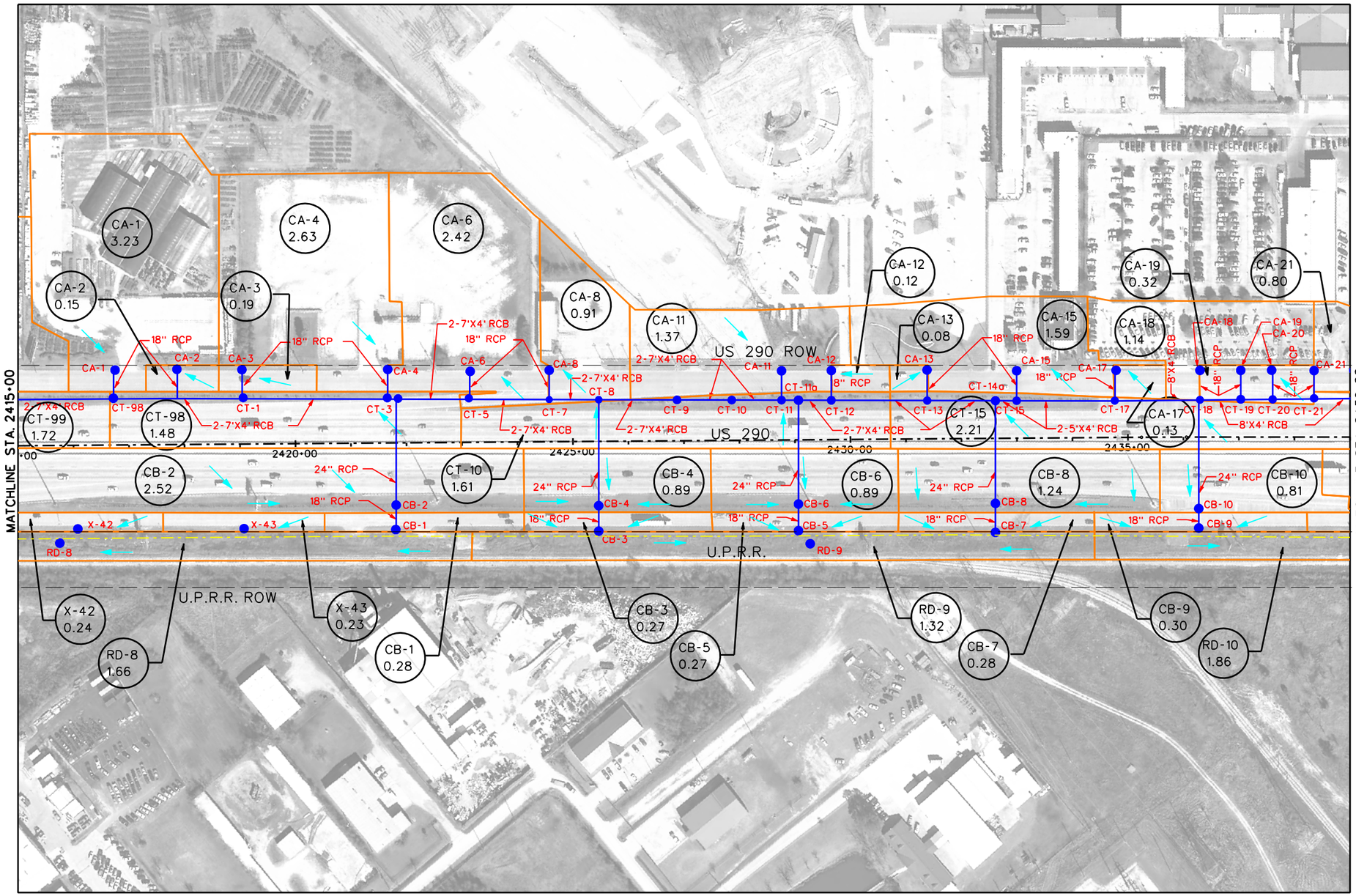
EXISTING DRAINAGE AREA MAP

SHEET 13 OF 36

8/27/2009

EXHIBIT 5

...\phase1\dra\Existing_13.dgn



LEGEND

- DRAINAGE AREA BOUNDARY
- EXIST. STM SWR/CULVERTS
- EXIST. CHANNEL/DITCH
- INLET/MH (ANALYSIS NODE)
- SHEET FLOW DIRECTION
- ML-03 4.49 — DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)

0 100 200 400

SCALE (H) 1" = 200'
(V) 1" = 10'

PRELIMINARY
SUBJECT TO CHANGE

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EXISTING DRAINAGE AREA MAP

SHEET 14 OF 36

8/27/2009

EXHIBIT 5

...\phase1\dra\Existing_14.dgn

LEGEND

- DRAINAGE AREA BOUNDARY
- EXIST. STM SWR/CULVERTS
- EXIST. CHANNEL/DITCH
- INLET/MH (ANALYSIS NODE)
- SHEET FLOW DIRECTION
- ML-03 4.49 — DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)

0 100 200 400

SCALE (H) 1" = 200'

PRELIMINARY
SUBJECT TO CHANGE

Program Office
Brookhollow III,
2950 North Loop W.
Suite 1150
Houston, Texas 77092

Texas Department of Transportation

US 290 PMC

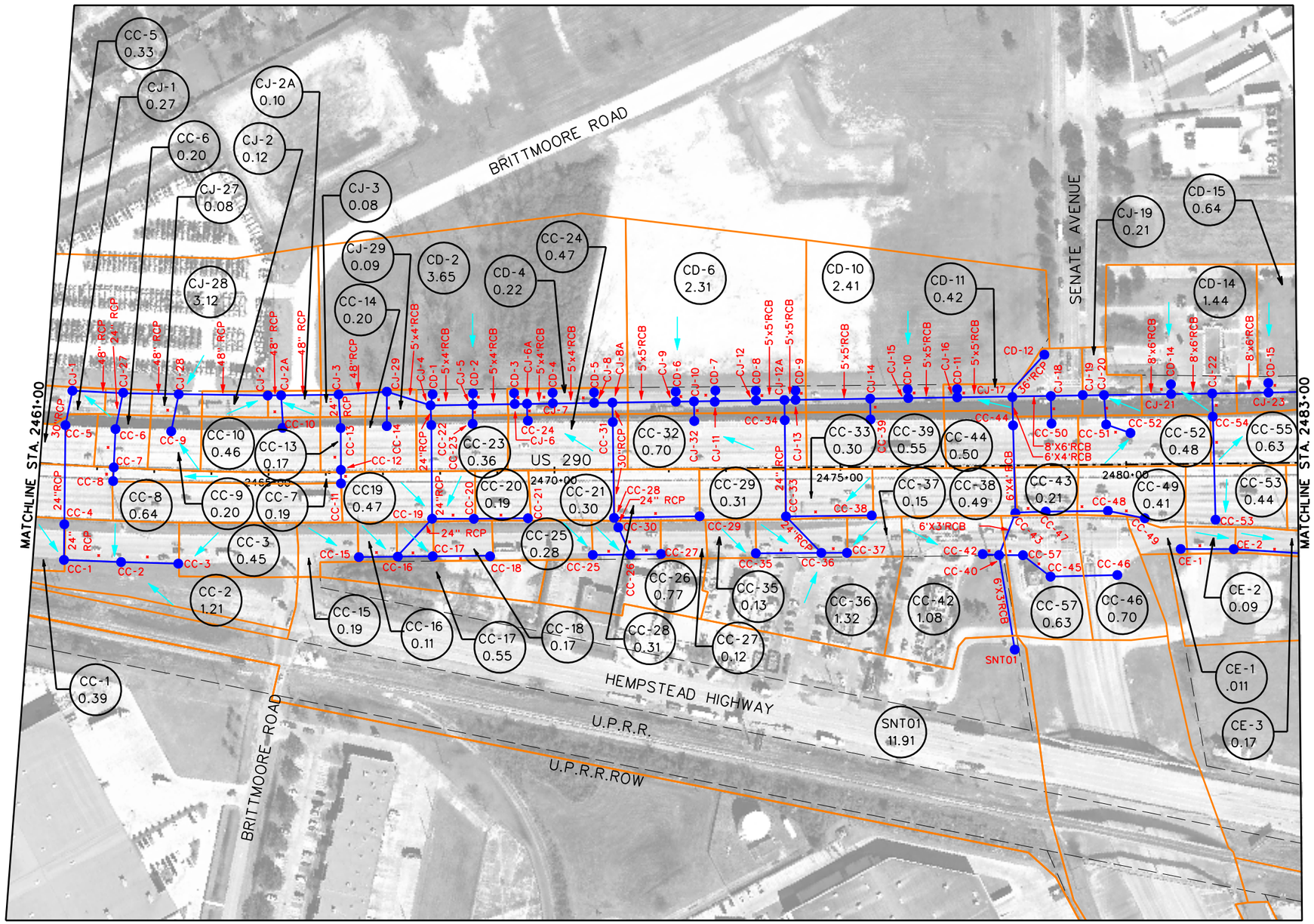
EXISTING DRAINAGE AREA MAP

SHEET 15 OF 36

8/27/2009

EXHIBIT 5

...\phase1\dra\Existing_15.dgn



MATCHLINE A-A
SEE EXHIBIT 5, SHEET 17A

LEGEND

- DRAINAGE AREA BOUNDARY
- EXIST. STM SWR/CULVERTS
- EXIST. CHANNEL/DITCH
- INLET/MH (ANALYSIS NODE)
- SHEET FLOW DIRECTION
- ML-03 4.49 — DRAINAGE AREA LABEL/ DRAINAGE AREA SIZE (AC)

NOTE

* IS AN 18" RCP

0 100 200 400

SCALE (H) 1" = 200'
(V) 1" = 10'

PRELIMINARY
SUBJECT TO CHANGE

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US 290 PMC

EXISTING DRAINAGE AREA MAP

SHEET 16 OF 36

2/27/2012

EXHIBIT 5

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