Assessment of The Green Pond Detention Basin and Ditch 600 (Green Pond Gully) for Jefferson County Drainage District 6

Prepared by:

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Executive Summary

Gauge Engineering (Engineer) was retained by Jefferson County Drainage District 6 (District) to investigate the Green Pond Detention Basin (basin) and Ditch 600 improvements completed between years 2010 and 2017. The purpose of this investigation is to evaluate the effects of the basin and channel construction on the portion of the watershed upstream (north) of the basin. The control structure and basin were designed to impound stormwater runoff and reduce flows downstream resulting in a downstream benefit. In performing this function, the in-channel control structure increases the Water Surface Elevation (WSEL) in Ditch 600 for a controlled distance upstream of the basin in the uninhabited forested region. This controlled increase is by design and is designed to persist for the 100-yr TP40 event to a distance of ~3-mi upstream of the control structure, before the channel improvements begin to reduce the WSEL. The Ditch 600 channel improvements were designed to efficiently convey runoff to the basin and to provide a flood mitigation benefit upstream. A primary objective of this investigation is to determine the distance upstream from the control structure that the increase in WSEL extends for a variety of storm events, including Tropical Storm Imelda, before the channel improvements compensate and begin to provide lower WSELs. Based on the results of this investigation, it appears that the basin, water control structure, and channel improvements work together to achieve their intended goal of providing flood mitigation benefits both downstream and upstream of the project.

Two scenarios were evaluated to assist with this effort.

- Scenario 1 (Post-Project) – with the basin and channel improvements in place.
- Scenario 2 (Pre-Project) – without the basin and channel improvements in place.

Due to the magnitude of the storm event, Tropical Storm Imelda (Imelda) was the benchmark event evaluated for both scenarios. Scenario 2 simulates the effects of Imelda as if the basin and channel improvements were not in place. Scenario 1 represents the actual conditions in place during the Imelda event. Watershed models that represent the drainage system both with and without the basin and channel improvements were developed. The models that represent the post-project condition (actual conditions during Imelda) were calibrated to rain and stream gauge data within the watershed for the Imelda event. In total, the investigation consisted of assessing Ditch 600 from the basin (southern limits) to the Turner Road crossing (northern limits) for Scenario 1 and Scenario 2 with HEC-RAS 2D using the excess rainfall on grid hydrology approach.

The following storm events were analyzed for both the pre and post project conditions:

1. Tropical Storm Imelda – Event of record for the watershed, producing 33 inches of rain in 24 hours and 28 inches of rain in 12 hours (exceeds a 1000-yr event) in the Ditch 600 watershed. Imelda was used as our calibration event. It was also used as the basis for determining the potential for impacts upstream of the basin.
2. 100-year Synthetic Storm Event (TP40) – Standard design event and engineering standard of care, consisting of 13.0 inches of rain in 24 hours and 11.0 inches of rain in 12 hours.
3. 100-year Synthetic Storm Event (Atlas 14) – 2018 update to TP40, consisting of 17.5 inches of rain in 24 hours and 14.4 inches of rain in 12 hours.

A comparison of the pre and post condition models (Table EX1 below) suggest the District's channel and basin improvements reduced peak-water-surface-elevations (PWSEL) along Ditch 600 upstream of the Lawhon Rd. crossing and provided improvements between the limits of the basin and Lawhon Rd. These findings are consistent with the models prepared by District in 2009 that were used to design the basin and channel improvements.

Table EX1. Peak WSEL (2D model results) for Imelda, 100-yr TP40, and 100-yr Atlas 14.

Name	River sta	DD6 Gauge ID	Imleda			100-yr TP40			100-Yr Atlas 14		
			Max WSEL (ft) W/ Basin	Max WSEL (ft) W/o Basin	Delta (ft)	Max WSEL (ft) W/ Basin	Max WSEL (ft) W/o Basin	Delta (ft)	Max WSEL (ft) W/ Basin	Max WSEL (ft) W/o Basin	Delta (ft)
Turner Rd.	623+62	5100	36.73	37.13	-0.40	36.53	36.77	-0.24	36.76	37.11	-0.35
HW90	538+00	-	29.89	30.34	-0.45	29.28	29.71	-0.43	29.71	30.14	-0.43
Lawhon Rd.	339+26	6100	27.47	27.43	0.04	25.83	25.68	0.15	26.46	26.29	0.17
Control Structure	94+93	5400	26.02	23.44	2.58	22.67	22.15	0.52	23.36	22.69	0.67

The control structure within Ditch 600 was designed to allow frequent low flow conditions to pass uncontrolled and to force larger extreme events into the basin. The control structure was constructed in August of 2016. Stream gauge data from events prior to and after the construction of the control structure were evaluated to determine if conclusions could be drawn regarding the potential for impact because of the control structure construction. Stream gauge data from the following events were evaluated.

1. 4-15-2015 Storm Event – Represents approximately a 2-year event that occurred prior to the construction of the control structure. 3.2-inches in 12-hours at Turner.
2. 12-8-2018 Storm Event – Represents approximately a 2-year event that occurred after the construction of the control structure. 4.2-inches in 12-hours at Turner.

After the construction of the control structure, the basin and control structure resulted in a very limited and controlled increase in WSEL that terminates near Lawhon Road. Table EX2 summarizes the results of the gauge evaluation

Table EX2. Peak WSEL comparison of 12-8-8 and 4-15-15 event (pre and post control structure).

Name	River sta	Gauge	Peak WSEL (ft)		
			4-15-15	12-8-18	Delta WSEL
Turner Rd.	623+62	5100	33.06	32.73	-0.33
Lawhon Rd.	339+26	6100	23.95	23.98	0.03
FM 365/ US of Control Structure	94+93	5403	20.84	22.24	1.40
FM 365/ DS of Control Structure	94+93	5404	-	18.02	-
Delta WSEL at Control Structure (5403 -5404)			-	4.22	-

Based on information (gauged data) currently available, and our evaluation of Imelda on pre- and post-project model results, it is the Engineer's opinion that the District's basin and channel improvements have : (1) increased WSEL's, as intended by the District, between the basin's control structure and Lawhon Rd., (2) not significantly changed WSEL's between Lawhon Rd. and Ditch 609, and (3) decreased WSEL's between Ditch 609 and Turner Rd. (near China) for both the extreme event and frequent 2-yr event.

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1.0 Introduction

Gauge Engineering (Engineer) was retained by Jefferson County Drainage District 6 (District) to investigate Green Pond Detention Basin (basin) and Ditch 600 improvements completed between years 2010 and 2017. The purpose of this investigation is to evaluate the effects of the basin and channel construction on the portion of the watershed upstream (north) of the basin. This investigation includes a pre and post project assessment of the Ditch 600 system (~50 sq-miles) for multiple storm events including Tropical Storm Imelda.

1.1 Background

The basin was constructed to impound stormwater for the purpose of providing flood mitigation relief downstream of FM 365. Improvements to Ditch 600 were constructed to provide flood mitigation benefits upstream of the basin—lowering WSEL's adding conveyance to the basin. The basin was designed to store the additional runoff generated from the Ditch 600 improvements while reducing flows downstream.

Provided in the following enumerates is a summary of the 2009 improvements by the District:

- Basin's inundation area was constructed by adding embankment (~48,000-LF) north of FM 365 up to an approximate elevation of 25'—refer to Exhibit A.1 (2009 Basin Improvements) for more information.
- Basin's emergency spillway (~1,500-LF) was designed to an approximate elevation of 23'
- Ditch 600 low flow, at the basin, is controlled by 2-9'x9' RCB (flowline elevation of 11.5') and 1-72" CMP (flowline of 8.5')—190 sf-ft of flow area
- Ditch 600 was improved between FM 365 (southern terminus) and approximately 2,700-ft north of SH90 (northern terminus). These improvements consisted of:
    - Dredging the channel, while preserving the existing low flow channel, along the exterior banks, which increased its cross-sectional area by more than 2X
    - Lowered the channel flowline by ~1-ft in isolated areas
    - Removed structures, keeping Lawhon Rd. crossing, between the basin and SH90 (4 in total)

Since these improvements, the District has experienced two inordinate rainfalls: (1) Hurricane Harvey (2017) and (2) Tropical Storm Imelda (2019). In addition to these events, the City of China (City), presented photos depicting flooding along S. China Rd (south of Ditch 609) that arose during a rainfall event on 12-8-2018. The City has asserted the District's project, because it pre dates these events, caused negative impacts to residents upstream of the basin during these storms—this report aims to provide clarity on how this facility functioned during these events by: (1) reviewing District's supporting data, (2) reviewing the models used to design the project, and (3) assessing the facility (pre and post conditions) with 2D modeling in HEC-RAS.

2.0 Rainfall Events

Engineer was provided hourly rainfall data from the District's network (103 stations) and stage data from its interactive website (https://www.dd6.org/rainfall-elevations/maps/rainfall-data-map). Provided in Table 1 is the list of District's stations utilized in this investigation—refer to Figure 1 and Exhibit A.2 of Appendix A for a map of these stations.

Table 1. Metadata of District's stations.

Rainfall ID	WSEL ID	NAME	LAT	LONG	CAPTURE EVENT (Y/N)?		
					4/17/2015	12/8/2018	IMELDA
3020	3023	LAWHON DETENTION POND AT DITCH 400	30.001	-94.261	N	N	Y
5100	5103	TURNER ROAD @ DITCH 600	30.064	-94.315	Y	Y	Y
5200	5203	SOUTH CHINA ROAD @ DITCH 608	30.016	-94.349	Y	Y	Y
5300	5303	SOUTH PINE ISLAND ROAD @ DITCH 607	30.038	-94.255	N	N	Y
5400	5403	STATE HIGHWAY 365 @ DITCH 600 GREEN POND GULLY	29.945	-94.326	Y	Y	Y
5800	5803	MOORE ROAD @ DETENTION POND C DITCH 607	30.097	-94.273	N	N	Y
6000	6003	SOUTH CHINA ROAD @ DITCH 800	29.958	-94.346	Y	Y	Y
6100	6103	LAWHON ROAD @ GREEN POND ROAD	30.000	-94.299	Y	Y	Y
6200	6203	PINE TREE DITCH 601 @ SOUTH CHINA ROAD	29.972	-94.337	Y	Y	Y

Table 2. District's design rainfall (Table 4-2 of District's criteria manual).

Table 4-2 from DD6 criteria manual						
Return Period (years)	1HR	2HR	3HR	6HR	12HR	24HR
2	2.5	3.1	3.4	4	4.6	5.5
5	3.1	3.8	4.25	5.1	6.2	7.5
10	3.42	4.4	4.8	6.1	7.5	8.8
25	3.82	5	5.65	7	8.6	10.2
100	4.7	6.2	7	8.8	11	13

2.1 Two-Year Event Comparison – Before and After Basin's Control Structure

2.1.1 April 17, 2015 (4-17-2015) Event (Before Basin Control Structure)

District's records indicate the 4-17-15 event started at 4/16/15 11:00 AM and ended at 4/17/15 5:00 AM (18-hr event), producing an average storm depth of ~ 6.5-inches. A comparison of this event's maximum hourly totals, provided in Table 3, to the District's design depths in Table 2, suggests it approached a 2-yr return period (50% annual-exceedance-probability, AEP).

As shown in Table 4, Lawhon road Rd at Ditch 600 (Station 6103) peaked to an elevation of 23.95-ft at 4/17/15 8:44 AM, which margianlly exceed the channel banks (see Figure 9). Upstream of Lawhon Rd., at the Ditch 608 and S. China Rd. crossing (Station 5203), peaked at 4/18/15 3:51 AM (~19 hrs. after Station 6103) to an elevation of 29.59-ft, which exceeded Ditch 608 banks by ~ 1-ft. Station 5103, near the Ditch 600 and Turner Rd. crossing, peaked at 4/16/15 11:39 PM (~24-hrs prior to Station 5203) to an elevation of 33.06-ft, which like the crossing at Lawhon, did not exceed the channel banks. These results indicate Ditch 600 peaked nearly 1-day in advance of the peak at Station 5203 (area of observed flooding) and was ~6.5-ft (elevation 23.0-ft) lower at Lawhon Rd. than Station 5203. The elapsed time between the different gauge peaks lends to the conclusion that the Ditch 608 peak was influenced by a localized storm cell that occurred after the event that canvased the Ditch 600 watershed. Typical watershed timing and characteristics would call for Ditch 608 and Turner to peak well in advance of Ditch 600 given the smaller time of concentration. Similarly, the peak WSEL (20.84-ft) at Station 5403 (basin's control structure) occurred at 11:30 AM , nearly 3-hrs after Lawhon Rd., 16-hrs before Ditch 609 at S. China, and 12-hrs after the Turner Rd. Ditch 600 crossing.

A photo of localized flooding at 541 S. China Rd (~1 mile N. of Station 5200) is provided in Figure 3. The 2017 LIDAR indicates the crown of roadway for S. China Rd. in this area (between Ave D and C) is 32.8-ft, which appears to overtop

by ~3-inches in this photo (WSEL of ~33-ft). Similarly, the 2017 LIDAR indicates Ditch 609 (ditch draining this area) has an approximate flowline of 27-ft and top bank of 34-ft. These findings indicate this area is likely to flood in advance of Ditch 609 reaching its full capacity (~50% full at an elevation of 33-ft). A linear interpolation between Station 6103 and 5103 peak WSEL's indicates the peak WSEL at the Ditch 609 and 600 confluence could have potentially rose to an elevation of ~25.1-ft, nearly 8-ft less than the approximated depth in Figure 3 and 2-ft less than the flowline of ditch 609 at S. China Rd. With the Ditch 600 WSEL being significantly lower (~25.1-ft) than the documented inundation WSEL (~33-ft), it is unlikely that the documented inundation was significantly influenced by the Ditch 600 WSEL.

Table 3. Maximum rainfall depths from 4-17-15 event.

STATION	1HR	2HR	3HR	6HR	12HR	24HR
5400	1.73	2.6	3.43	3.82	**6.26**	**6.69**
6000	1.5	2.92	**3.83**	**4.46**	**7.1**	**7.85**
6200	1.34	2.36	3.34	3.94	**6.38**	**7.02**
6100	1.06	1.77	2.68	3.47	**5.48**	**6.03**
5200	1.46	2.33	2.41	3.91	**6.11**	**7.21**
5100	1.26	1.46	1.69	2.6	**4.88**	**5.72**
5300	0.67	1.06	1.45	2.25	4.1	4.81
AVG	1.29	2.07	2.69	3.49	**5.76**	**6.48**

Return Period (years)
2
5
10
25
100

Station	Location
5400	Greenpond control structure (US) @ DITCH 600
6000	S. China Rd. @ Ditch 800
6200	S. China Rd. @ Ditch 601
6100	Lawhon Rd. @ Ditch 600
5200	S. China Rd. @ Ditch 608
5100	Turner Rd. @ Ditch 600
5300	S. Pine Island Rd. @ Ditch 607

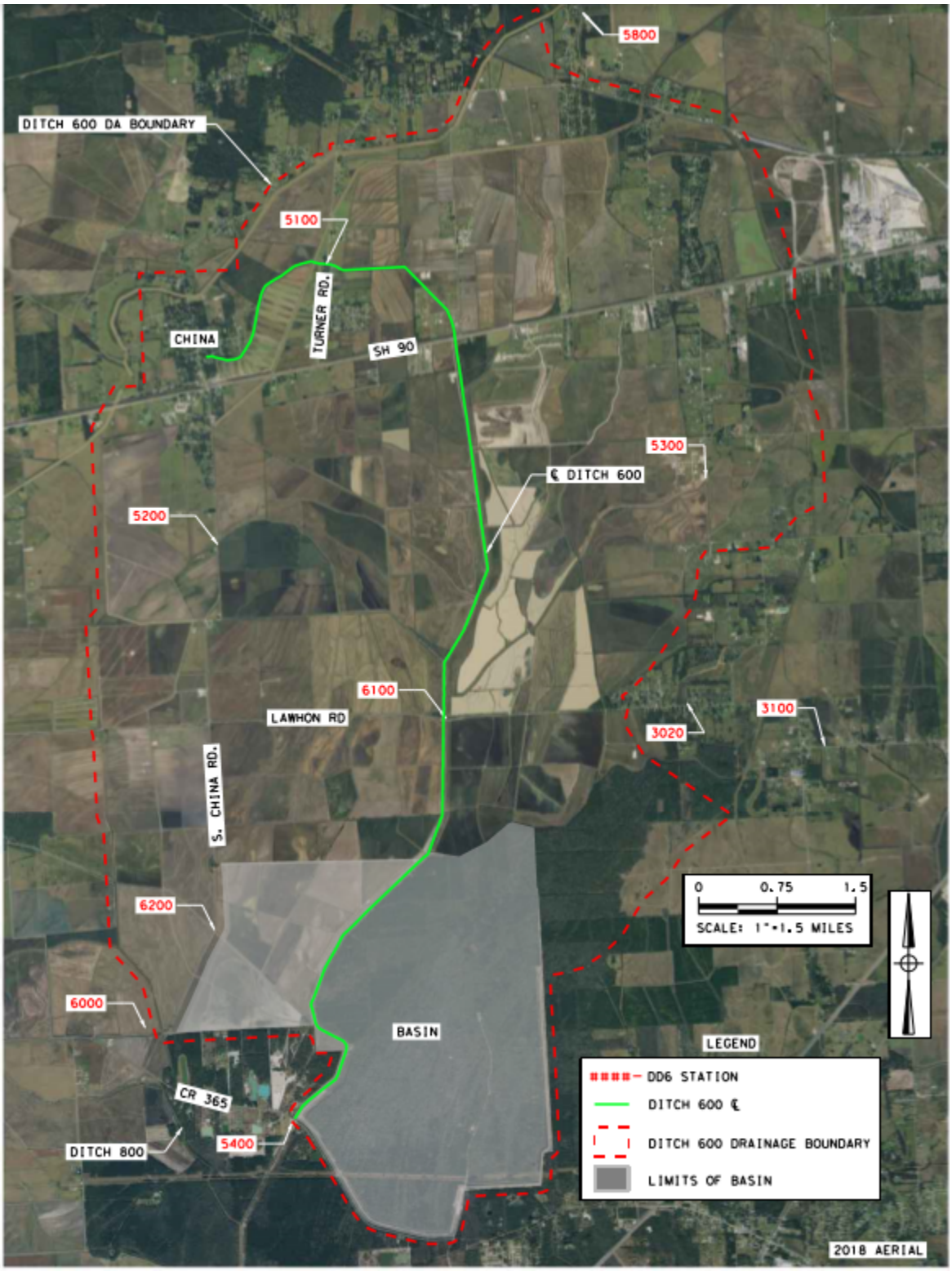
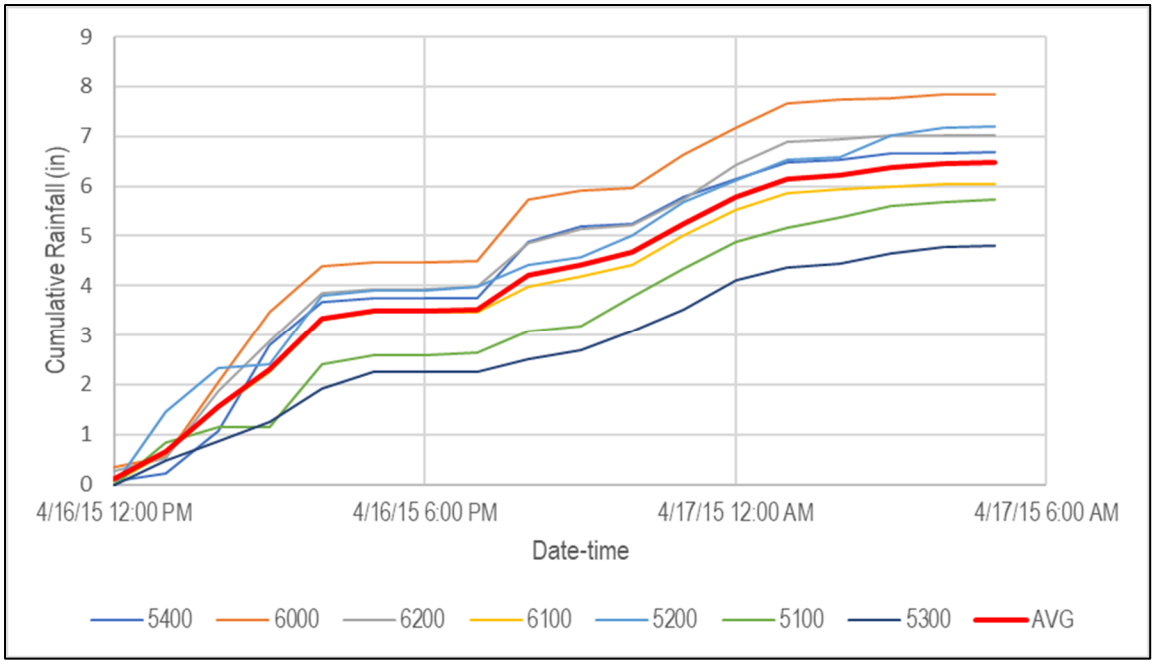


Figure 1. Map of District's stations.



Station	Location
5400	Greenpond control structure (US) @ DITCH 600
6000	S. China Rd. @ Ditch 800
6200	S. China Rd. @ Ditch 601
6100	Lawhon Rd. @ Ditch 600
5200	S. China Rd. @ Ditch 608
5100	Turner Rd. @ Ditch 600
5300	S. Pine Island Rd. @ Ditch 607

Figure 2. Cumulative rainfall distribution for 4-17-15 event.

Table 4. Summary of max WSEL for 4-17-15 event.

ID	Location	Peak WSEL (FT)	Time to Peak
5103	Turner Rd. @ Ditch 600	33.06	4/16/15 11:39 PM
5303	S. Pine Island Rd. @ Ditch 607	28.46	4/17/15 10:05 AM
5203	S. China Rd. @ Ditch 608	29.59	4/18/15 3:51 AM
6103	Lawhon Rd. @ Ditch 600	23.95	4/17/15 8:44 AM
6203	S. China Rd. @ Ditch 601	24.28	4/19/15 12:42 AM
6003	S. China Rd. @ Ditch 800	21.72	4/18/15 1:22 AM
5403	Greenpond control structure (US) @ DITCH 600	20.84	4/17/15 11:30 AM
5404	Greenpond control structure (DS) @ DITCH 600	-	-

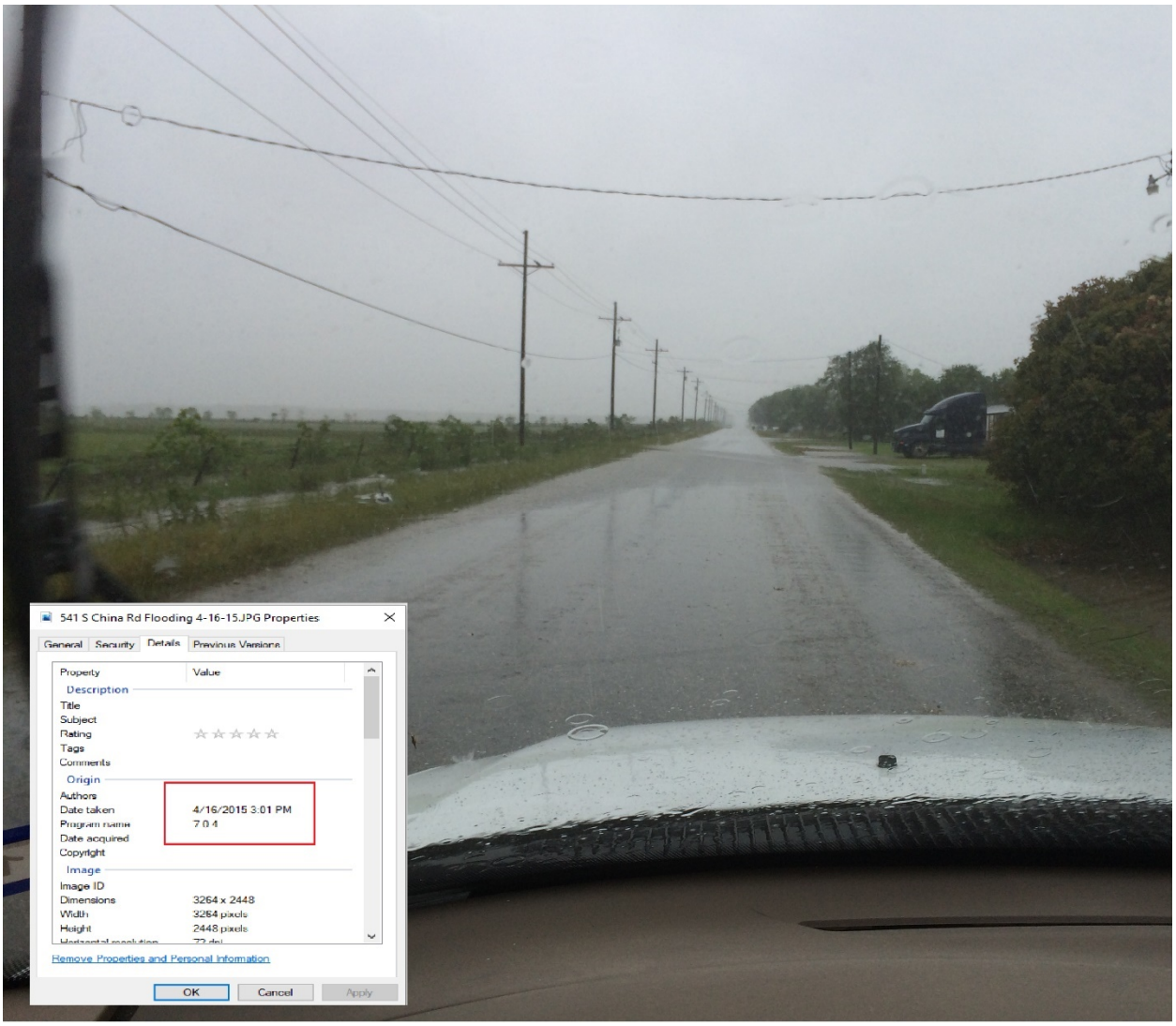


Figure 3. Captured flooding of 4-17-15 event at 541 S. China Rd (before detention basin project).

2.1.2 December 8, 2018 (12-8-2018) Event (After Basin Control Structure)

The 12-8-18 event started at 12/7/18 5:00 PM and ended at 12/8/18 6:00 AM (12+ hr duration), producing an average rainfall of ~ 4.5-inches. Like the 4-17-15 event, this event hardly exceeded a 2-yr event.

During this the event the basin's outfall peaked to an elevation of 22.24-ft at12/8/18 10:29 PM (Station 5403, Table 6), coincidentally its downstream station (5404) recorded a depth of 17.69-ft. This indicates a 4.5' WSEL difference upstream and downstream of the basin. Likewise, at or around 12/8/18 10:30 PM the WSEL at Lawhon Rd. approached an elevation of 23.89-ft (peak WSEL of 23.98-ft at 12/8/18 12:50 PM, ~2.5-hrs later than Station 5404), S. China Sd. Station 5203 measured ~26.5-ft (peak WSEL of 26.84-ft at 12/8/18 5:54 AM, ~5.5-hrs prior to 5404), and Turner Rd. Station 6103 rose to ~31.29-ft (peak WSEL of 32.73 at 12/8/18 2:20 AM, ~8-hrs in advance of 5404). As shown in Figure 9, this event did not exceed Ditch 600 (Stations 5404, 6103, and 5103) or Ditch 608 banks (Station 5203).

It was determined from City photos that localized flooding near the city of China occurred between the hours of 12/8/18 09:00 AM and12/8/18 12:00 PM. The Districts records indicate:

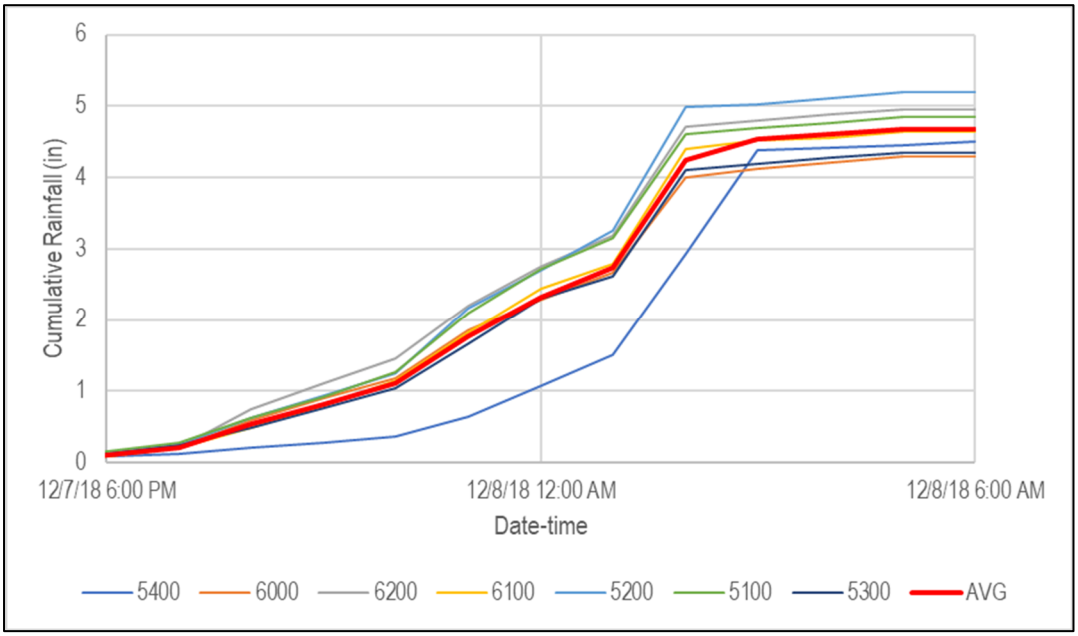
- Basin's WSEL (Station 5404) was rising from an elevation of 21.77-ft (12/8/18 9:59 AM) to an elevation of 21.98-ft (12/8/18 11:29 AM) and peaked ~12-hrs (12/8/18 10:29 PM) after the time of these photos. This is an indication that water was draining to the basin, not backing up from the basin.
- Lawhon Rd. WSEL (Station 6103) was at a static elevation of 23.66-ft between the time of 12/8/18 8:50 AM and 12/8/18 10:50 PM, peaking ~1 to 2-hrs after the time of those photos—an indication water was draining towards the Lawhon crossing, not backing up.
- S. China Rd. at Ditch 608 (Station 5203) was essentially cresting to a peak elevation of 26.84-ft between the time of 12/8/18 5:54 AM and 12/8/18 2:24 PM but did not exceed Ditch 600 banks—indicating Ditch 608's capacity was exceeded.
- Turner Rd. WSEL (Station 5103) was receding from an elevation of 31.69 to 30.86-ft between the time of 12/8/18 9:20 AM 12/8/18 12:20 PM, which peaked at an elevation of 32.73-ft during the time of 12/8/18 2:20 AM (~6-hrs in advance of these photos)—this indicates water was draining to the Lawhon Rd. crossing during the time of these photos.
- Like the 4-17-15 event, a linear interpolation of the peak WSEL between Stations 6103 and 5103 indicates Ditch 600 could have risen to an elevation of 25.1-ft. The flooding in Figure 5 suggests waters rose the same levels as the 4-17-15 event, nearly 8-ft higher than the levels at Ditch 600 and 609.

Table 5. Maximum rainfall depths from 12-8-18 event.

STATION	1HR	2HR	3HR	6HR	12HR	24HR
5400	1.46	2.88	3.31	**4.1**	4.46	4.54
6000	1.34	1.73	2.16	3.42	4.29	4.29
6200	1.54	1.97	2.52	3.97	**4.96**	5
6100	1.61	1.96	2.59	3.92	**4.64**	4.68
5200	1.73	2.28	2.83	4.36	**5.19**	5.23
5100	1.46	1.89	2.52	3.98	**4.85**	4.89
5300	1.5	1.81	2.44	3.63	4.35	4.39
AVG	1.52	2.07	2.62	3.91	**4.68**	4.72

Return Period (years)
2
5
10
25
100

Station	Location
5400	Greenpond control structure (US) @ DITCH 600
6000	S. China Rd. @ Ditch 800
6200	S. China Rd. @ Ditch 601
6100	Lawhon Rd. @ Ditch 600
5200	S. China Rd. @ Ditch 608
5100	Turner Rd. @ Ditch 600
5300	S. Pine Island Rd. @ Ditch 607



Station	Location
5400	Greenpond control structure (US) @ DITCH 600
6000	S. China Rd. @ Ditch 800
6200	S. China Rd. @ Ditch 601
6100	Lawhon Rd. @ Ditch 600
5200	S. China Rd. @ Ditch 608
5100	Turner Rd. @ Ditch 600
5300	S. Pine Island Rd. @ Ditch 607

Figure 4. Cumulative rainfall distribution for 12-8-18 event.

Table 6. Summary of max WSEL for 12-8-18 event.

ID	Location	Peak WSEL (FT)	Time to Peak
5103	Turner Rd. @ Ditch 600	32.73	43442.09782
5303	S. Pine Island Rd. @ Ditch 607	28.08	12/8/18 2:57 AM
5203	S. China Rd. @ Ditch 608	26.84	12/8/18 5:54 AM
6103	Lawhon Rd. @ Ditch 600	23.98	12/8/18 12:50 PM
6203	S. China Rd. @ Ditch 601	21.84	12/8/18 7:59 AM
6003	S. China Rd. @ Ditch 800	19.7	12/8/18 3:05 PM
5403	Greenpond control structure (US) @ DITCH 600	22.24	12/8/18 10:29 PM
5404	Greenpond control structure (DS) @ DITCH 600	18.02	12/8/18 4:29 PM

Figure 5. Captured flooding for 12-8-18 event at 541 S. China Rd (after detention basin project).

2.1.3 Event Comparison Summary April 17, 2015 and December 8, 2018

The control structure for the detention basin was constructed in August of 2016. The 4-17-2015 and 12-8-2018 rainfall events occurred before and after the construction of the control structure (respectively). Stream gauge data from both events were evaluated to determine if conclusions could be drawn regarding the potential for impact because of the control structure and basin construction. Stream gauge data from the following events were evaluated.

1. 4-15-2015 Storm Event – Represents approximately a 2-year event that occurred prior to the construction of the control structure. 3.2-inches in 12-hours at Turner.
2. 12-8-2018 Storm Event – Represents approximately a 2-year event that occurred after the construction of the control structure. 4.2-inches in 12-hours at Turner.

After the construction of the control structure, the basin and control structure resulted in a very limited and controlled increase in WSEL that terminates near Lawhon Road (shown in Figures 3 and 5). Table 7 summarizes the results of the gauge evaluation.

Table 7. Peak WSEL comparison of 12-8-8 and 4-15-15 event (pre and post control structure).

Name	River sta	Gauge	Peak WSEL (ft)		
			4-15-15	12-8-18	DELTA WSEL
Turner Rd.	623+62	5100	33.06	32.73	-0.33
Lawhon	339+26	6100	23.95	23.98	0.03
FM 365/ US of Control structure	94+93	5403	20.84	22.24	1.40
FM 365/ DS of Control structure	94+93	5404	-	18.02	-
Delta WSEL at Control Structure (5403 -5404)			-	4.22	-

Based on the evaluation of gauge data collected before and after the construction of the control structure, it is evident that the basin, control structure, and channel improvements do not adversely impact stakeholders upstream of the basin. As noted in the table, there is an increase in WSEL immediately upstream of the control structure of 1.40-ft, as expected. This increase is mitigated by the channel improvements as you move upstream and approach the Ditch 600 Lawhon crossing. The channel improvements result in a decrease in WSEL as you approach Turner Rd.

2.2 Imelda

Tropical Storm Imelda started at 9/16/19 1:00 PM and ended at 9/20/19 4:00 PM (4+ day duration), producing ~33.5-inches of rainfall, on average, across the Ditch 600 watershed—most occurring in less than a 12-hr period. Results of the maximum hourly totals across the ditch 600 watershed are provided in Table 8. Unlike the prior two rainfall event documented in this report above, Imelda approached the caliber of a "vis major," and significantly exceeded 100-year return periods (~2.5X 12 and 24-hr 100-yr rainfall depths).

Provided in Table 9 is a summary of the peak WSEL during Imelda. Station 5404 and 5403 records indicate the basin's emergency spillway engaged at 9/18/19 11:47 PM, remaining engaged until 9/24/19 11:48 AM (~5.5-days); during that time, the basin reached a peak WSEL of ~26.0-ft (9/19/19 5:47 PM). District confirmed the basin's levee breached during these peak hours. Stations 6003 and 6203 reached a peak elevation of 26.11 and 26.71-ft at times 9/19/19 9:08 AM and 9/19/19 8:42 AM, which exceeded the basin's western levee (~26.0-ft from 2017 LIDAR) and indicates Ditch 800 overflowed into the Ditch 600 system. During the time of 9/19/19 2:04 PM (~4-hrs prior to the basin's Peak) Lawhon Rd. was severely overtopped to a peak WSEL of 28.08-ft (nearly 2.5-ft over the roadway). Ditch 608, at S. China Rd. crested at 9/19/19 11:27 AM (~8-hrs prior to the basin) to an elevation of 31.03-ft (~3-ft over S. China Rd.). The Turner Rd. cross at Ditch 600 peaked during the time of 9/19/19 1:58 PM (~4-hrs prior to the basin) to an elevation of 35.35-ft, overtopping the roadway by ~2-ft. Flooding near Dich 609 and S. China Rd, shown in Figure 7, indicates Imelda flooded structures near Ditch 609 (photo taken at 541 S. China Rd). Linear interpolation between Stations 5103 and 6103 suggest Ditch 600 could have approached an elevation of 29.0-ft at the confluence of Ditch 609, this would have been nearly 5-ft higher than the 4-17-15 and 12-8-18 events. However, the flooding near 541 S. China Rd. (Figure 7) appears to be only slightly higher than the flooding observed for the 4-17-15 and 12-8-18 events (Figures 3 and 5 respectively).

Table 8. Maximum rainfall depths from Imelda.

STATION	1HR	2HR	3HR	6HR	12HR	24HR
3020	3.5	6.85	9.53	16.02	26.97	30.85
5100	2.91	4.21	5.04	8.35	16.69	21.55
5200	3.27	5.83	6.85	10.42	18.02	22.36
5300	3.07	4.61	5.99	9.11	17.15	20.93
5400	6.5	9.3	12.61	20.21	30.33	33.88
5800	2.56	3.35	4.48	6.64	12.39	16.74
6100	4.41	6.38	9.21	14.34	24.47	28.34
6200	5.28	8.71	11.66	18.83	27.77	31.45
AVG	3.94	6.16	8.17	12.99	21.72	25.76

Return Period (years)
2
5
10
25
100

3020	Lawhon Rd. @at Ditch 400
5100	Turner Rd. @ Ditch 600
5200	S. China Rd. @ Ditch 608
5300	S. Pine Island Rd. @ Ditch 607
5400	Greenpond control structure (US) @ DITCH 600
5800	Moore rd. @ Ditch 607
6000	S. China Rd. @ Ditch 800
6100	Lawhon Rd. @ Ditch 600
6200	S. China Rd. @ Ditch 601

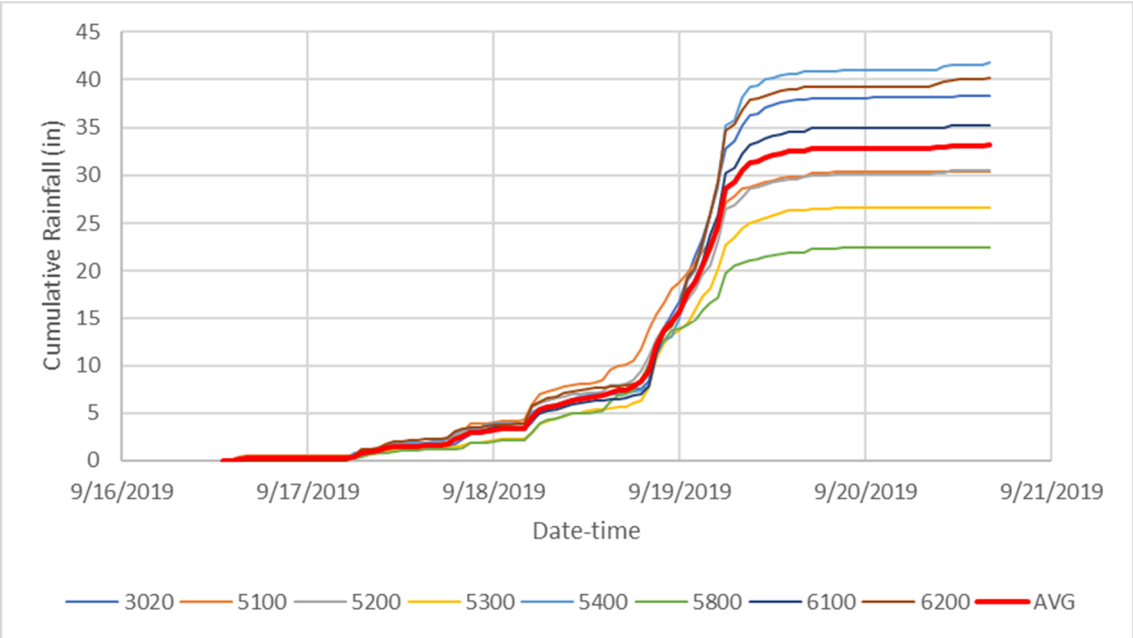


Figure 6. Cumulative rainfall distribution for Imelda.

Table 9. Summary of max WSEL for Imelda.

ID	Location	Peak WSEL (FT)	Time to Peak
5103	Turner Rd. @ Ditch 600	35.35	9/19/19 1:58 PM
5303	S. Pine Island Rd. @ Ditch 607	31.1	9/19/19 6:11 AM
5203	S. China Rd. @ Ditch 608	31.13	9/19/19 11:27 AM
6103	Lawhon Rd. @ Ditch 600	28.08	9/19/19 2:04 PM
6203	S. China Rd. @ Ditch 601	26.11	9/19/19 9:08 AM
6003	S. China Rd. @ Ditch 800	26.71	9/19/19 8:42 AM
5403	Greenpond control structure (US) @ DITCH 600	25.99	9/19/19 5:47 PM
5404	Greenpond control structure (DS) @ DITCH 600	25.41	9/19/19 5:47 PM

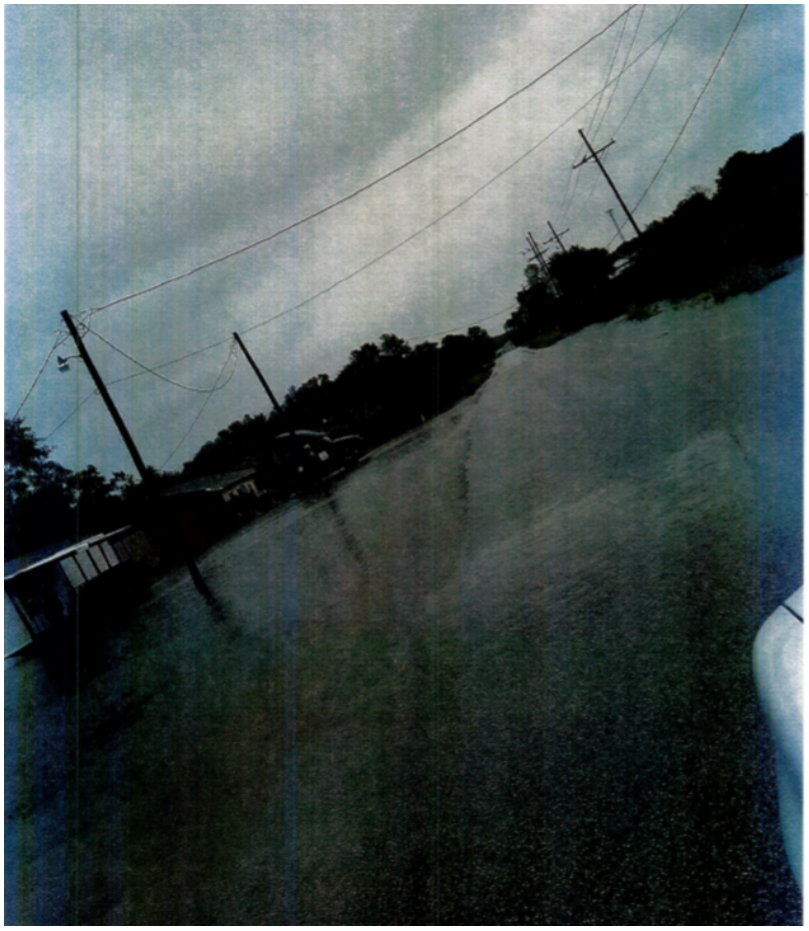


Figure 7. Captured flooding from Imelda at 541 S. China Rd.

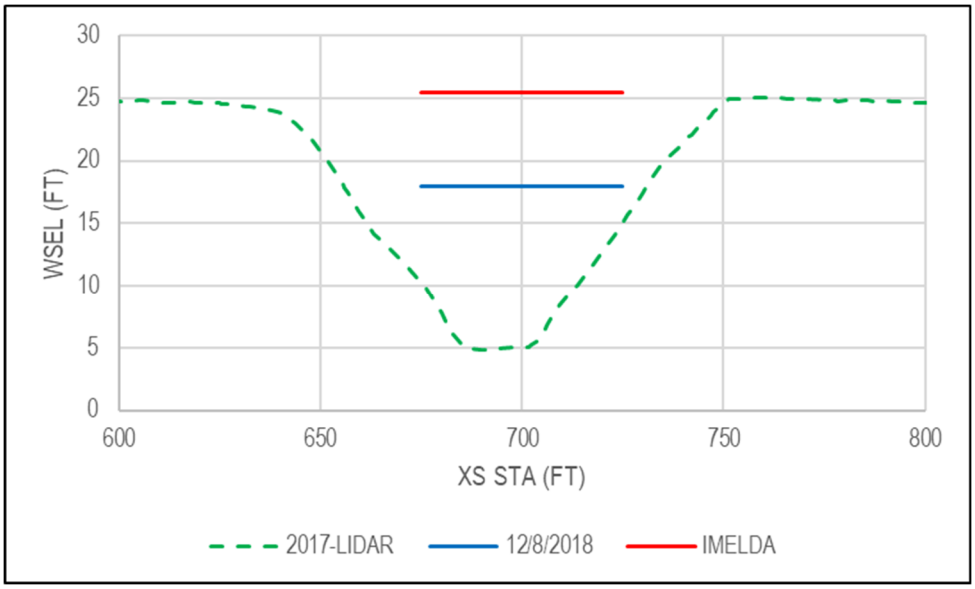


Figure 8. Peak WSEL at Station 5404-basin Outfall & Ditch 600.

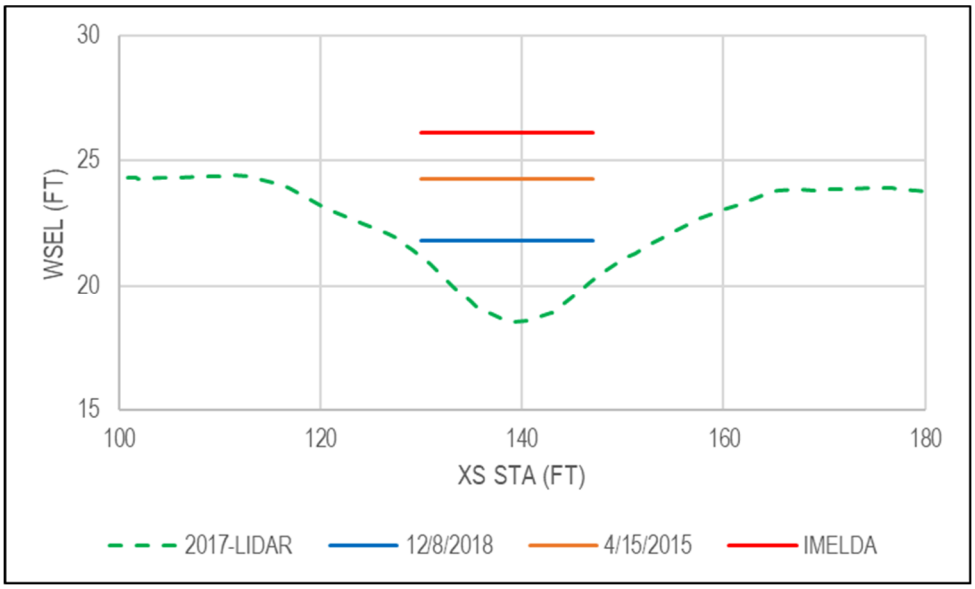


Figure 9. Peak WSEL at Station 6203-S. China Rd. & Ditch 601.

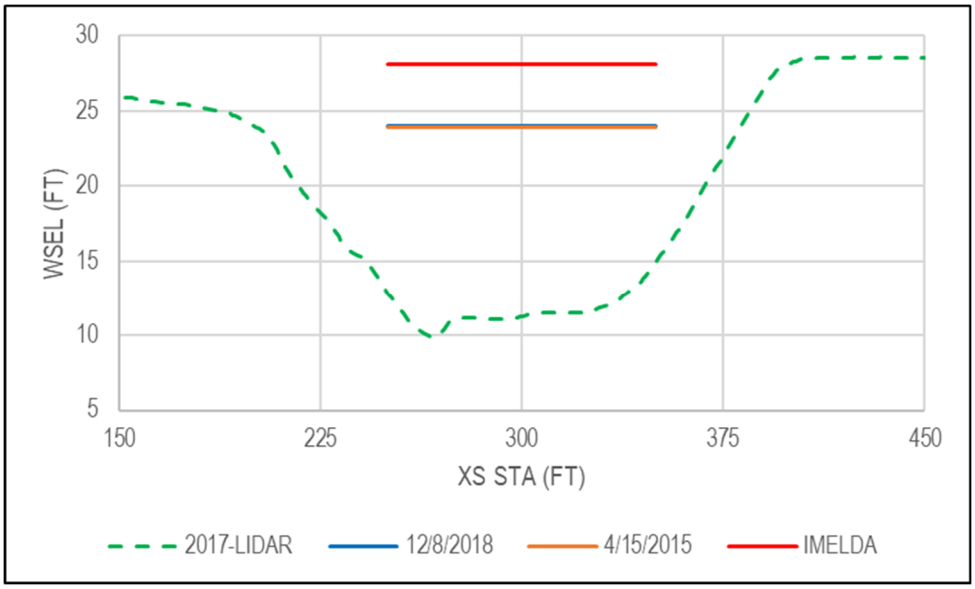


Figure 10. Peak WSEL at Station 6103-Lawhon Rd. & Ditch 600.

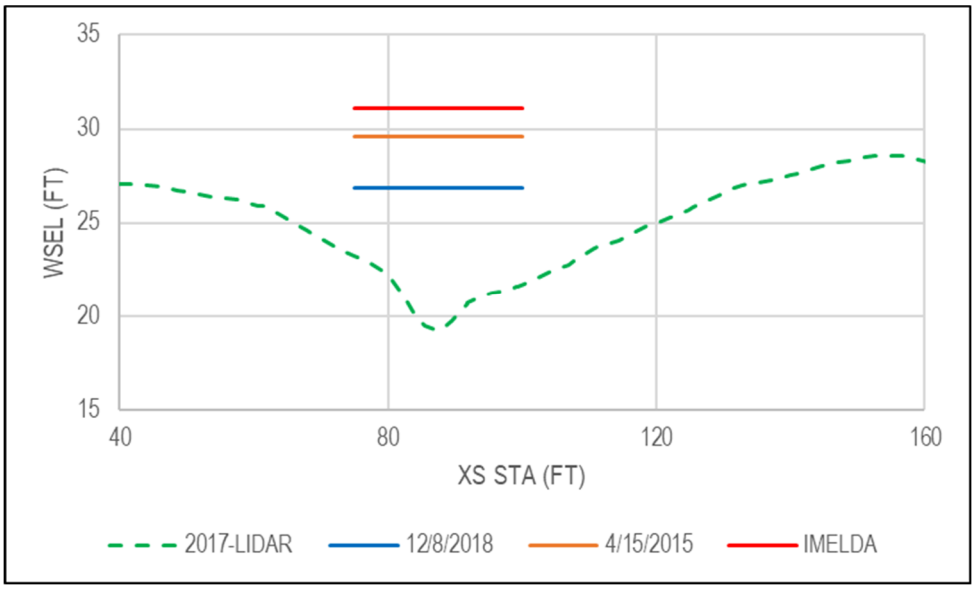


Figure 11. Peak WSEL at Station 5203-S. China Rd. & Ditch 608.

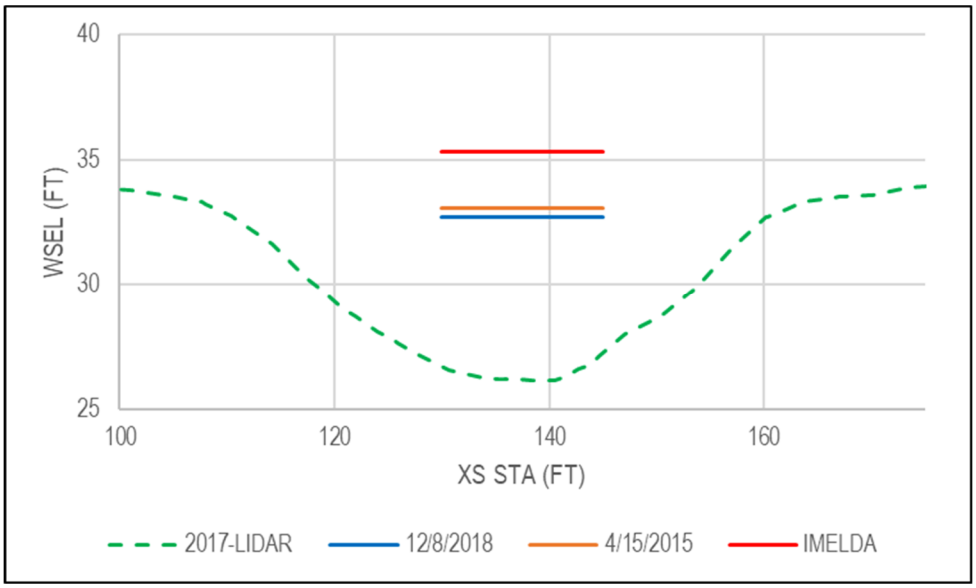


Figure 12. Peak WSEL at Station 5103-Turner Rd. & Ditch 600

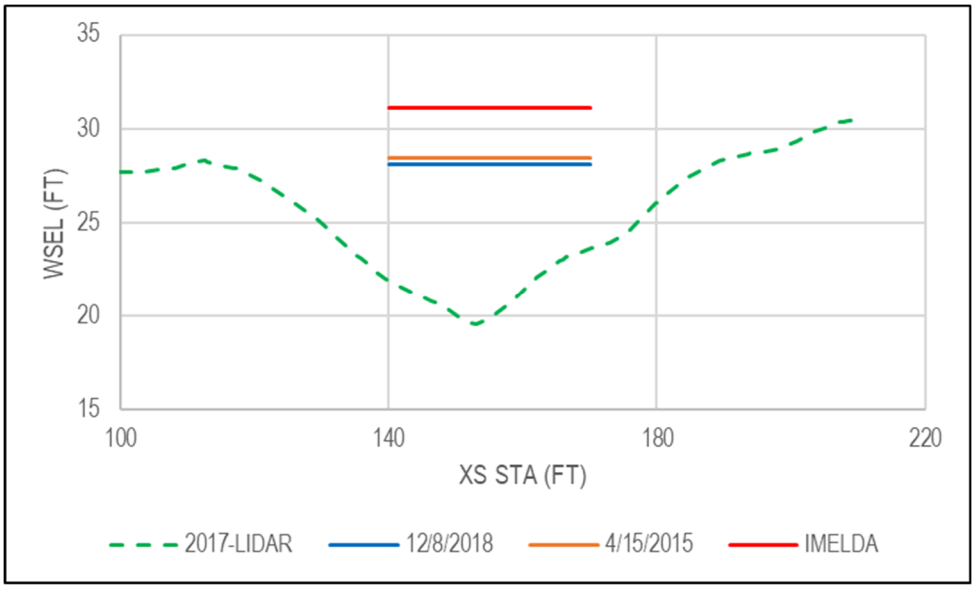


Figure 13. Peak WSEL at Station 5303-South Pine Island Rd. & Ditch 607.

3.0 Ditch 600 Watershed Evaluation with and without Basin Improvements

3.1 Prior Studies

Engineer was provided hydrology and hydraulic models (HEC-HMS and HEC-RAS) for the Taylor watershed from District, which included pre and post project simulations of the basin. Bulleted hereafter is a summary of the modes reviewed by Engineer:

- HEC-RAS project **alt_nf.prj**
  - Plans:
    - Existing Greenpond 3 120309 (pre project model)
    - Proposed 3 120309 (post project model)
- HEC-HMS project **DD6_1033**
  - Basins:
    - Existing (pre project model)
    - Exist w Detention (post project model)

Engineer's cursory review of the pre and post project models indicates the project reduces water-surface-elevations (WSEL) upstream of the basin for the 100 and 500-yr events. It was determined that the 2-yr event does cause a rise in WSEL between the limits of the basin's control structure (Station 1430) and approximately 6,725-ft downstream of Lawhon Road (Station 27200.6)—the post project analysis shows a reduction in WSEL upstream of Station 27200.6. Refer to Appendix A for a summary of the pre and post project 2, 100, and 500-yr WSEL (see Figure 14, Figure 15, and Figure 16). In addition to the reduction to WSEL, the post project condition for Ditch 600, between river station 10380 to 58224.2 9 (limits of channel improvements), shows an increase in channel conveyance (avg increase of ~3X), flow area (avg increase of more than 2X), and channel flow (avg increase of 6X) for the 500-yr event. Refer to Appendix B for the tabulated summaries the 2, 100, and 500-yr results and the 500-yr channel conveyance summaries.

It is Engineer's opinion that these results signify, at a cursory level, the post project condition improved Ditch 600 (e.g. lower WSEL and added conveyance), which subsequently reduces the flood risk upstream of the basin.

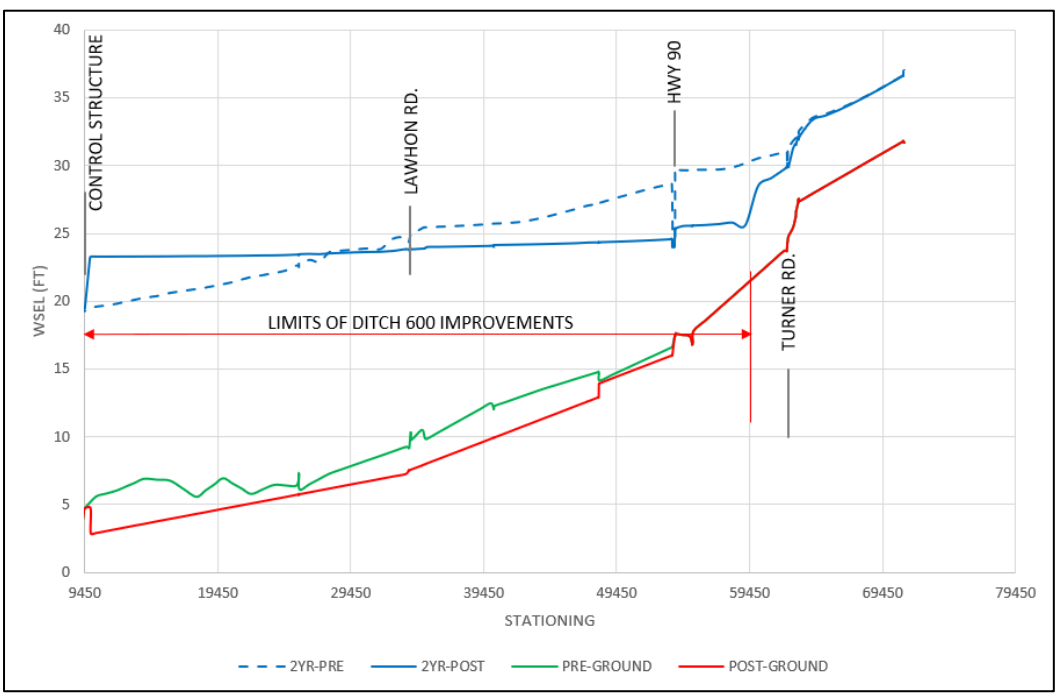


Figure 14. District's model results (2-yr WSEL).

Figure 15. District's model results (100-yr WSEL).

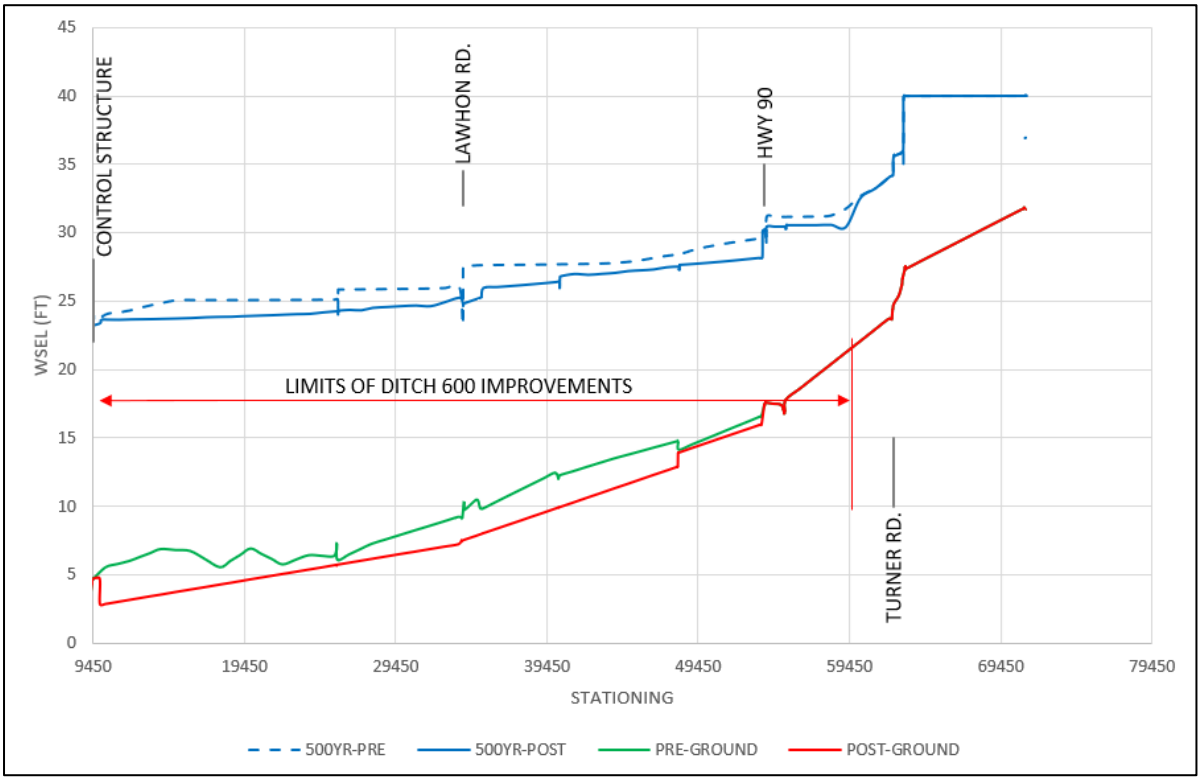


Figure 16. District's Model results (500-yr WSEL).

3.2 Updated Model for Ditch 600

Engineer initiated the modeling efforts by building on the District's models (models reviewed in Section 2.0) by supplementing HEC-RAS geometric data with 2017 LIDAR and HEC-HMS rainfall with the events in question. Engineer abandoned that approach, opting for a 2D analysis, after concluding the District's models could not adequately describe Imelda because:

1. Majority of flow was outside of the channel banks
2. 2D model better describes overbank flow along Ditch 600 (adjacent leveed systems provide storage), and
3. 2D model prevents iterations between HEC-RAS and HMS

Provided hereafter is an overview of how the HEC-RAS 2D models were prepared for this analysis.

3.2.1 HEC-RAS 2D Model Development

HEC-RAS version 5.07 was utilized in this analysis and used to perform a 2D rain on the mesh (incremental excess runoff from HEC-HMS) analysis of the 12-8-18, Imelda, 2 and 100-yr TP 40 synthetic events, and the 2 and 100-yr Atlas 14 synthetic events. The 4-15-15 event was not modeled because: (1) it was essentially the same caliber storm as the 12-8-18 event, and (2) Station 5404 and 5403 did not record WSEL's (lacking a boundary condition). The 2D modeling efforts consisted of developing eight models in total, how these modes were constructed is described in the following text.

3.2.1.1 Excess Rainfall

Increment excess rainfall distributions were constructed using HEC-HMS Version 3.5. Incremental rainfall for the 12-8-18 and Imelda events were developed from the cumulative average rainfall distributions in Figure 4 and Figure 6. The 2 and 100-yr Atlas 14 rainfall distributions were constructed from a 24-hr 50% intensity position frequency storm (same method as Districts' models) and depths in Table 10. Excess runoff was constructed using the curve number (CN) loss method and a CN of 80 and % impervious of 0% (similar parameters as the Districts model). The incremental excess runoff was linked to the 2D HEC-Models via DSS files.

Table 10. Atlas 14 DDF for Jefferson County, inches.

Duration	2-yr	100-yr
5-min:	0.61	1.3
15-min:	1.22	2.59
60-min:	2.34	5.02
2-hr:	2.96	7.35
3-hr:	3.34	9.12
6-hr:	4.02	12.2
12-hr:	4.72	15.1
24-hr:	5.48	18.2

Notes: Developed from Jefferson County centroid,
Latitude: 29.8837° Longitude: -94.1692°

3.2.2 HEC-RAS Geometric Data

A total of eight 2D HEC-RAS models were prepared for this analysis and are summarized in Table 11. These models were developed from 2006 (pre project) LiDAR and 2017 (post project) LIDAR, field survey, and elements form the District's models (Turner Rd culvert crossing).

3.2.2.1 Survey by DD6

District conducted field survey which obtained 9 Refer to Appendix C for a summary of the survey data gather by the District):

- 21 riverine cross sections between FM 365 and SH90,
- measurements of the structures at FM 365 (bridge),
- basin's control structure (2-9'x9' RCB, 1-72" CMP) and emergency spillway,
- Lawhon Rd. (bridge), SH90 (4-10'x7'RCB), and roadway crown elevations for FM 365, Lawnhon Rd., and SH90.

Engineer compared the surveyed points to 2006 and 2017 LIDAR, which indicated the LIDAR sets were on average 0.4 (2006) and 1.2-ft (2017) lower than the survey. A review of the 2006 and 2017 LIDAR QAQC records concluded the following:

- 2006 LIDAR (Jefferson County LIDAR QAQC report, elevation check)
  - Overall: RMSE of 17.62-cm (0.58-ft), 95% CI of 1.13-ft
- 2017 LIDAR (Eastern AOI, elevation check)
  - non-vegetative-vertical-accuracy (NVA): RMSE of 9.992-cm (0.33-ft), 95% CI of 0.64-ft
  - vegetative-vertical-accuracy (VVA): RMSE of 12.853-cm (0.42-ft), 95% CI of 0.83-ft

The foregoing summaries of the two LIDAR sets suggests they are generally within +/- 1-ft, as such, Engineer globally adjusted the 2017 LIDAR (+1-ft) to better match the surveyed roadway crowns (e.g. 1.2-ft >> 0.64-ft)—the 2006 LIDAR was not adjusted because its average error (0.4-ft) was noticeably lesser than its overall RMSE (0.58-ft).

It was determined that both LIDAR's were hydraulically enforced (bridges/culverts removed), excluding the SH90 and Turner crossings; however, the 2006 LIDAR was not developed from a bathymetric survey, which required modifying Ditch 600 between the basin's control structure to the downstream end of SH90. Ditch 600 was modified by superimposing the 2017 LIDAR low-flow channel with the 2006 LIDAR top banks—this was done so under the direction of the District's Engineer and using the construction drawing (typical sections) in Appendix a (Exhibit A.3).

3.2.3 Model Parameters

The HEC-RAS 2D models, which are summarized in Table 11, were developed using the following model parameters:

- Excess runoff (from HEC-HMS) was uniformly applied the 2D model domain (same rainfall for pre and post condition modes)
- 3 types of geometric conditions (see Exhibits A.4 through A.6)
- 2D mesh ("terrain") was constructed from the 2006 (pre condition) and 2017 (post condition), both surfaces were 1m X 1m grid size
- Cell sizes (200' X 200')
  - min size = 18,749 sq-ft
  - max size = 101,865 sq-ft
  - avg size = 40,116 sq-ft
  - total # cells = 35,081

  - total mesh area = 50.5 sq-mi
  - breakline along Ditch 600
- SA/2D Connection elements
  - SH90 culvert (4-10'x7'RCB from survey data)
  - Turner Rd. (15'x7' elliptical CMP from Districts HEC-RAS model)
- n values (default = 0.06) kept the same for all models
- Time steps (Ts = 15 sec) kept the same for all models, duration of simulations varied per scenario:
  - 12-8-18 event ran from 12-7-2018 5:00 PM to 12-10-2018 00:00
  - Imelda ran from 9-16-2019 2:00 PM to 9-20-2019 4:00 PM
  - Atlas 14 events 24-hr event (no specific date)
- Saint-Venant method (Diffusive wave)
- Boundary conditions: four types used (refer to Exhibits A.4 through A.6)
  - no flow (defined around perimeter of boundary to force flow to basin)
  - rating curves for basin's control structure (modeled 2-9'x'8 and 1-72" CMP in HY-8 culvert software) for post project synthetic simulations (TP40 and Atlas 14)
  - 12-8-18 and Imelda events of post project defined from Station 5403 WSEL data
  - normal dept for pre project conditions

Table 11. summary of HEC-RAS models.

MODEL	PLAN	GEOMETRY	FLOW	BOUNDARY CONDITION (RATING_CURVE)
POST-POND	12-8-18	POST-POND2	12-8-18	Station 5403 WSEL along Ditch 600 (200-LF)
POST-POND	IMELDA	POST-POND1	IMELDA	Station 5403 WSEL along Greenpond spillway (13,800-LF)
POST-POND	TP40-2YR	POST-POND2	TP40-2YR	HY-8 Culvert rating curve along Ditch 600 (200-LF)
POST-POND	TP40-100-YR	POST-POND2	TP40-100YR	HY-8 Culvert rating curve along Ditch 600 (200-LF)
POST-POND	ATLAS14-2YR	POST-POND2	ATLAS14-2YR	HY-8 Culvert rating curve along Ditch 600 (200-LF)
POST-POND	ATLAS14-100YR	POST-POND2	ATLAS14-100YR	HY-8 Culvert rating curve along Ditch 600 (200-LF)
PRE-POND	12-8-18	PRE_POND1	12-8-18	normal depth (FS =0.005) along Greenpond southern boundary
PRE-POND	IMELDA	PRE_POND1	IMELDA	normal depth (FS =0.005) along Greenpond southern boundary
PRE-POND	TP40-2YR	PRE_POND1	TP40-2YR	normal depth (FS =0.005) along Greenpond southern boundary
PRE-POND	TP40-100-YR	PRE_POND1	TP40-100YR	normal depth (FS =0.005) along Greenpond southern boundary
PRE-POND	ATLAS14-2YR	PRE_POND1	ATLAS14-2YR	normal depth (FS =0.005) along Greenpond southern boundary
PRE-POND	ATLAS14-100YR	PRE_POND1	ATLAS14-100YR	normal depth (FS =0.005) along Greenpond southern boundary

3.3 Validation

Post project scenario peak WSEL's were compared to the observed station for the 12-8-18 and Imelda events, and are summarized in Table 12. The comparison of modeled peak WSEL versus observed WSEL in this table indicates the models are agreeable to the WSEL—RSME is ~ 1.2-ft (both events, overall), and the R-square is nearly 0.9 (1.0 is a perfect match). It is plausible that the deviance could have originated from:

1. default "global' n-values in place of variable n-values
2. default CN in place of variable values
3. uniform rainfall in place of spatially distribution (e.g. using each Stations rainfall in place of the average)
4. variability of the surfaces (RSME of LIDAR was nearly 1-ft)

It is Engineer's opinion that these deviances are well within the margin of error for these models and their intended use, therefore the forging items for calibration were not considered.

Table 12. HEC-RAS 2D peak WSEL validation.

ID	12/8/2018			IMELDA			BOTH
	DATA	HEC-RAS	DELTA (DATA-HECRAS) (FT)	DATA	HEC-RAS	DELTA (DATA-HECRAS) (FT)	
6203	21.84	23.54	-1.70	26.11	26.11	0.00	-
6103	23.98	24.67	-0.69	28.08	27.30	0.78	-
5203	26.84	27.58	-0.74	31.13	29.01	2.12	-
5303	28.08	27.44	0.64	31.1	29.04	2.06	-
5103	32.73	34.15	-1.42	35.35	34.19	1.17	-
5403	22.24	22.24	0.00	25.99	26.02	-0.03	-
		AVG=	-1.00			1.00	0.18
		RMSE =	1.03			1.33	1.19
		R-SQUARE=	0.93			0.84	0.89

3.4 Results

The peak WSEL profiles for the 2D modeled events are provided in Figure 17 through Figure 20. As these figures illustrate, the post conditions do not deviate significantly from the pre conditions between the limits of FM365 and confluence of Ditch 609. These figures indicate the post conditions provide a noticeable improvement (reduction in WSEL) upstream of the Ditch 609 confluence. A cross comparison of the 2D Water Surface Profile (WSP) (Figure 17 through Figure 20) to the Districts WSP (Figure 14 and Figure 15), show similar characteristics—post condition 2-yr (more frequent) events and the 12-8-18 have large deviances (slight increases in post WSEL) near the basin's control structure, which dissipates you approach Lawhon Rd. The extreme events (100-yr and Imelda) generally remain unchanged throughout this zone because most of the flow is not contained within the channel (mainly overbank flow).

Provided in Table 1 and 13 are summaries of the modeled results along Ditch 600, as identified in the WSP, the max increases originate near the control structure and the max reductions are located upstream (near the City of China, Turner Rd.). This table also indicates the post condition, on average, reduces the peak WSEL along Ditch 600 for each of the events modeled. Also, as shown in the % reduction WSEL column, the post condition performs better during high flow events (e.g. Imelda). In summary, the results indicate that the basin, control structure and channel improvements provide an improved (lowered) water surface elevation for both the extreme event and more frequent 2-year events, when compared to the pre-project condition.

Table 13. Summary of max WSEL changes along Ditch 600.

Event	max increase (ft)	max reduction (ft)	Avg change WSEL (ft)	% Reduction WSEL
12-8-18	2.85	-1.56	0.06	47%
Imelda	2.59	-1.07	-0.15	69%
TP40-2yr	3.26	-2.09	0.02	60%
TP40-100yr	1.03	-1.18	-0.17	64%
Atlas 14-2yr	2.15	-1.51	-0.11	48%
Atlas14-100yr	0.77	-1.05	-0.18	65%

Notes: % Reduction WSEL caclucated by (# decrease cell / total # cells)

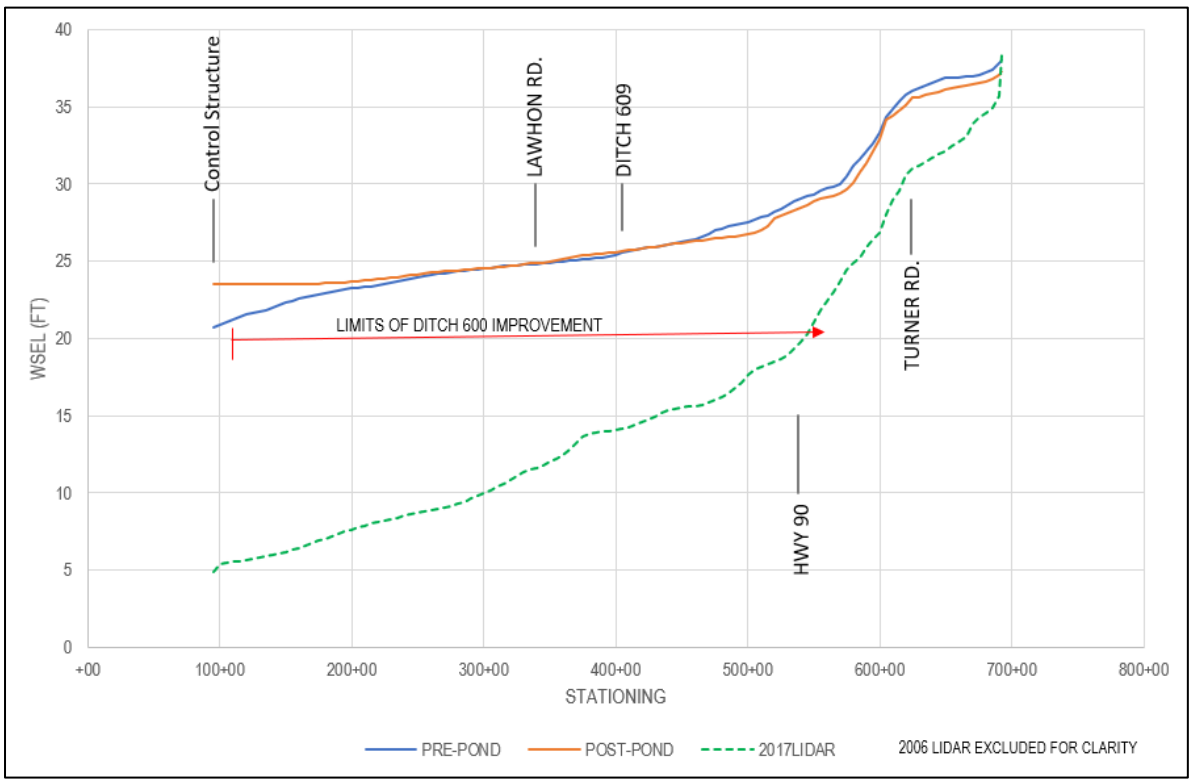


Figure 17. Ditch 600 peak WSEL for 12-8-18 2D models.

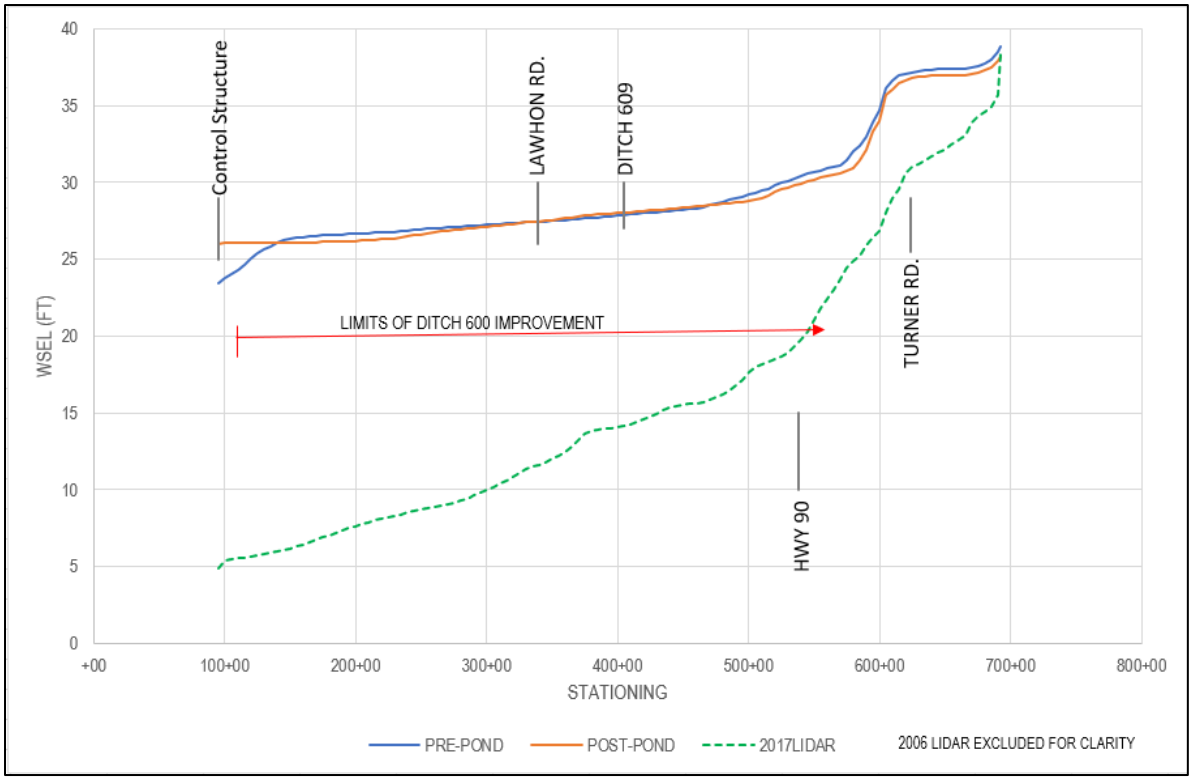


Figure 18. Ditch 600 peak WSEL for Imelda 2D models.

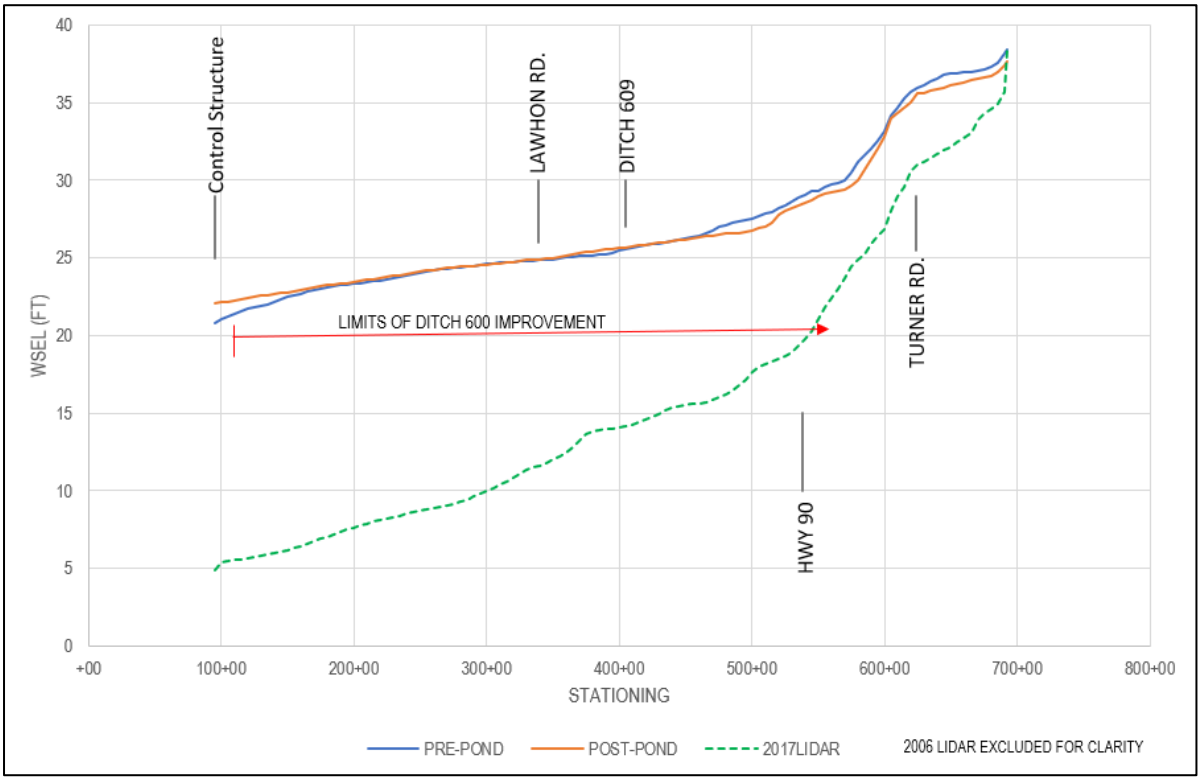


Figure 19. Ditch 600 peak WSEL for 2-yr Atlas 14 2D models.

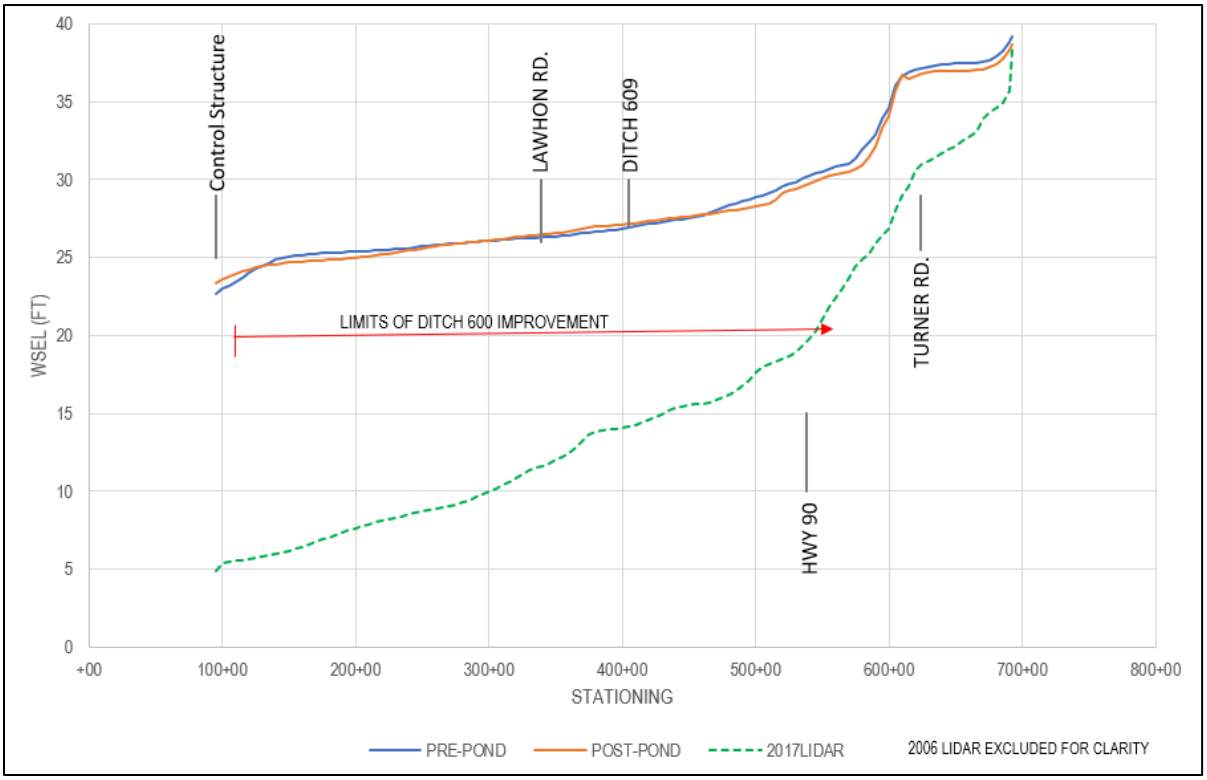


Figure 20. Ditch 600 peak WSEL for 100-yr Atlas 14 2D models.

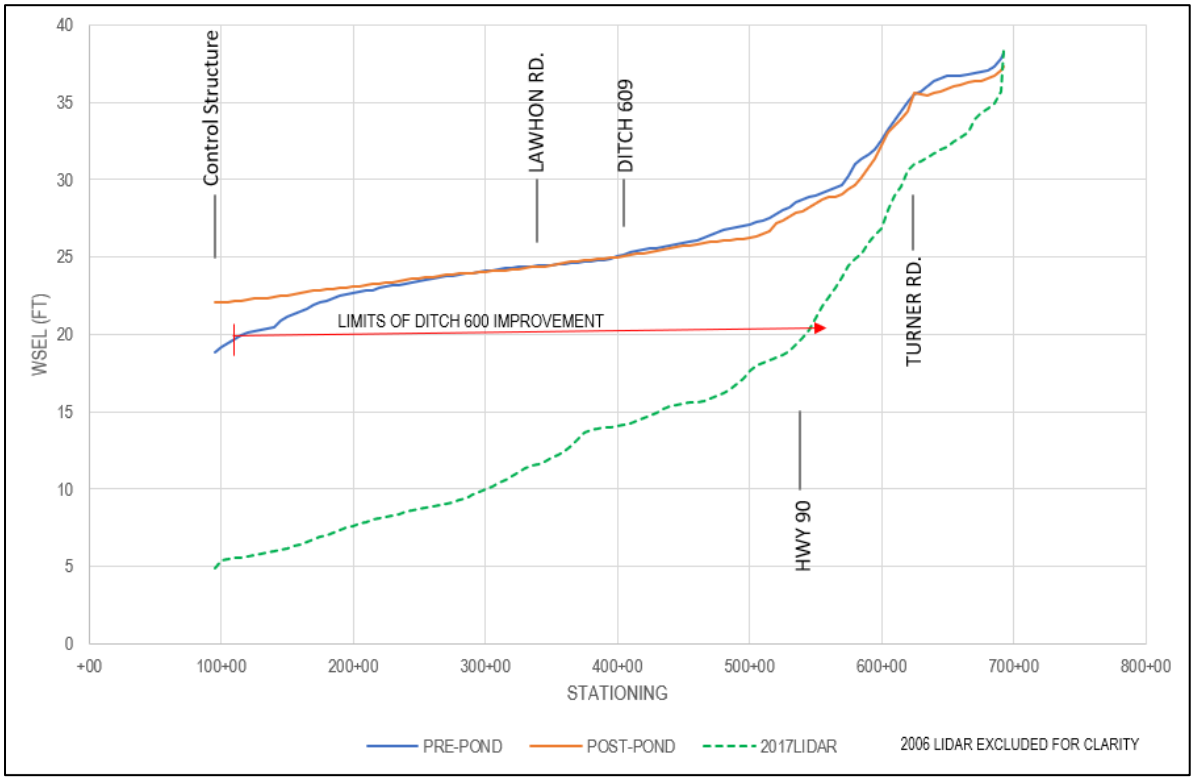


Figure 21. Ditch 600 peak WSEL for 2-yr TP40 2D models.

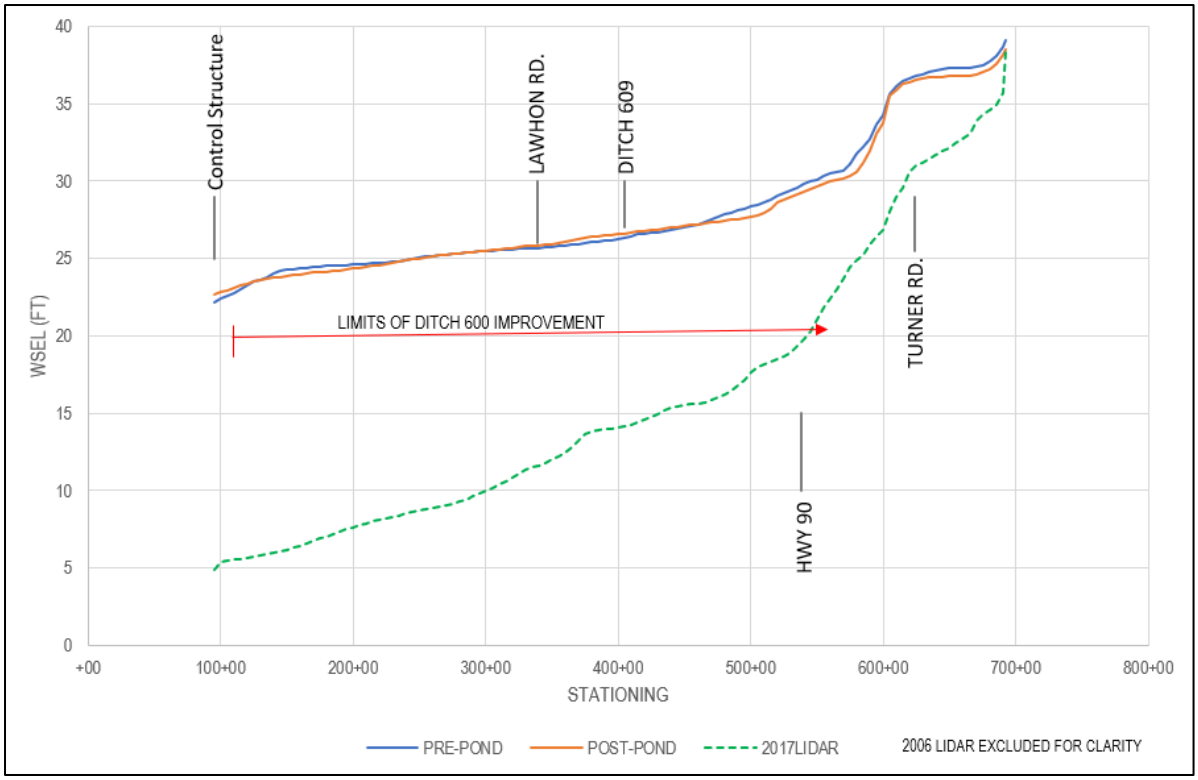


Figure 22. Ditch 600 peak WSEL for 100-yr TP40 2D models.

4.0 Conceptual Options to Reduce Potential Flooding Near the City of China

The general causes of flooding often include a lack of channel conveyance capacity necessary to evacuate the rainfall runoff from the developed regions, or a lack of stormwater detention necessary to store rainfall runoff to prevent for overtaxing the conveyance system. Engineer was tasked to provide feedback to the District on options to help reduce the observed flooding near the City of China—these options were not modeled nor quantitively defined, and therefore are not merited as Engineer's recommendation. The following options (see Figure 23) could be explored as independent or complementary projects to reduce future flooding near the City of China.

1. Ditch 609 channel improvement:
    a. Replace S. China Rd. Crossing (upsize)
    b. Deepen and widen (bigger XS similar to ditch 600 from S. China Rd. to Ditch 600
    c. Local ditch improvements along S. China Rd to Ditch 609
2. Extend Ditch 600 improvements up to N. Broadway
    a. Enlarge Ditch 600 improvements by ~2.8-mi
    b. Add an off-line detention basin
3. Detention basin northwest of the City of China
4. To accommodate future potential increases in flows associated with the above projects, and to accommodate additional flows realized by increased rainfall criteria (Atlas 14), increasing the Green Pond Detention Basin footprint may be considered by expanding the basin to the east.

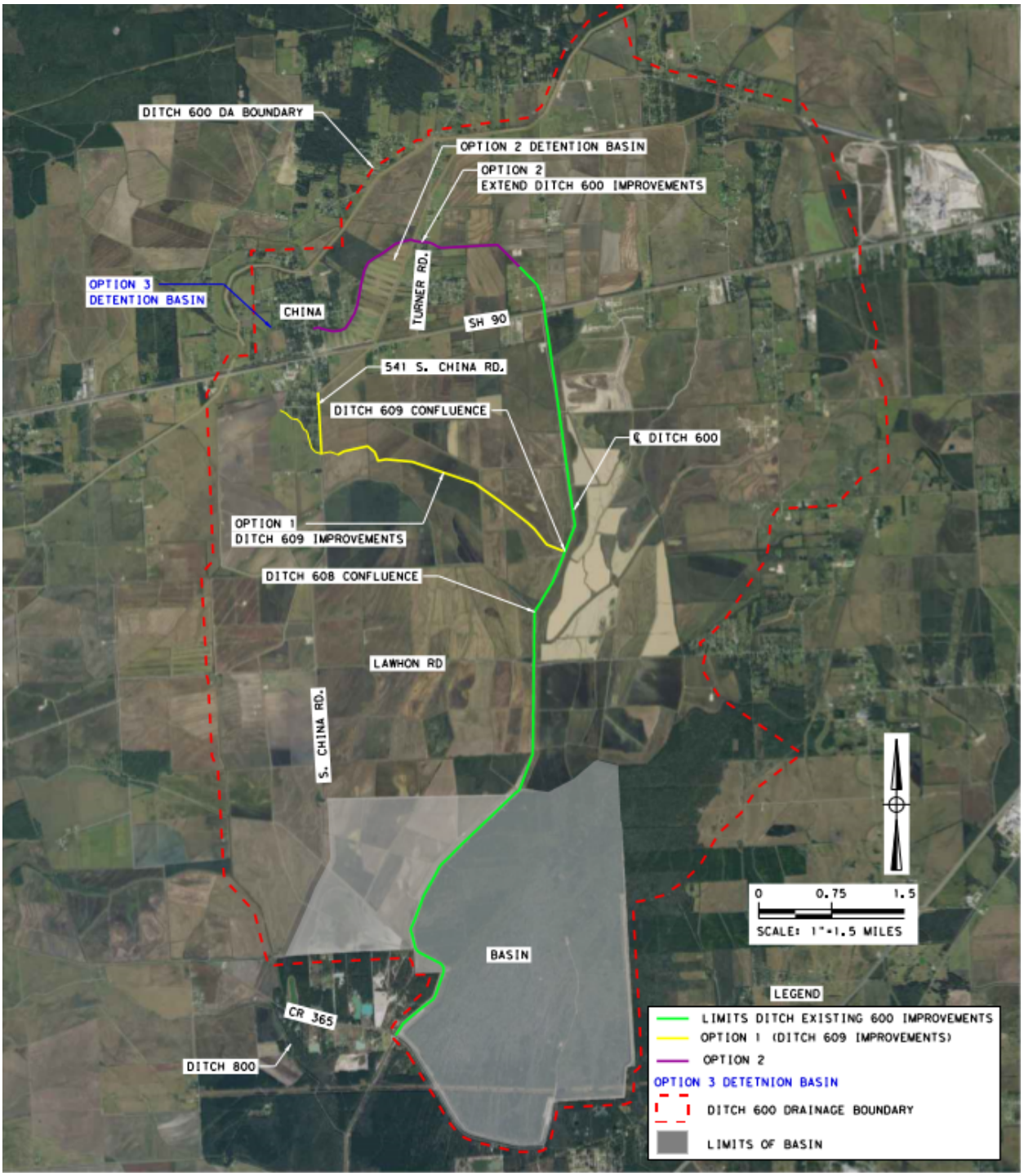


Figure 23. Potential improvements.

5.0 Summary

It is evidently clear from the results in Section 3, that the post conditions (2016 improvements) for the Green Pond Detention Basin (basin) and Ditch 600 did not cause the flooding observed in China, Texas during the 4-15-15, 12-8-18, and Imelda events. Furthermore, as intended, the rises in WSEL between the basin's control structure and Lawhon Rd., during the 12-8-18 event and 2-yr synthetic events, are approximately contained within the Districts inundation easements (upstream of the basin). Furthermore, the improvements provide an improvement (reduction in peak WSEL) upstream of confluence of Ditch 600 and 609.

Engineer provides added clarity to the foregoing conclusions: our review of the District' models and design drawings indicates Ditch 600 was drastically improved by moderately deepening it and, for the most part, more than doubling its cross sectional flow area, and removing three crossings between FM 365 and SH 90 and one crossing south of FM 365. Intuitively, these improvements will reduce WSEL (flood risk), which is supported by both the District's models and the 2D models developed in this analysis. Furthermore, the basin's control structure does increase the WSEL in the vicinity of the basin (as designed) during more frequent events but these effects are attenuated as you move upstream, and are not present upstream of Lawhon Rd. Our models, and District models, indicated there to be a reduction, or insignificant change (>0.1-ft), in WSEL at the confluence of Ditch 600, 608, and 609—this indicates the flooding observed and documented in the City of China during the 4-15-15 and 12-8-18 events was likely attributed to other causes, which could potentially be reduced by future District projects, or something similar.

Appendix A-Exhibits

A.1. District Improvements (Basin and Ditch 600)

A.2. DD6 Stations Map

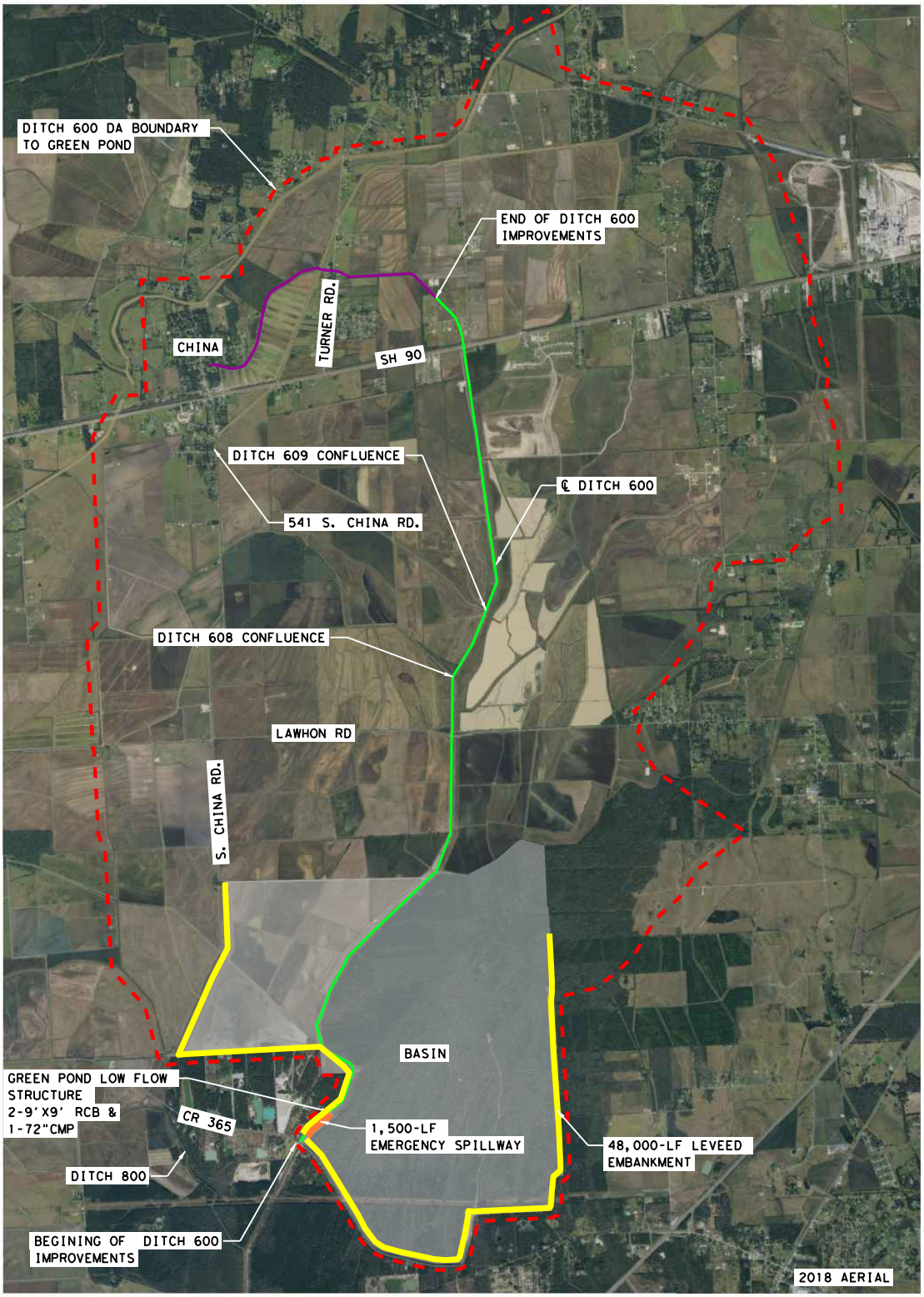
A.3.1. Ditch 600 Improvements (Cross Section Location)

A.3.2. Ditch 600 Improvements (Cross Sections)

A.4. HEC-RAS 2D Model Layout for Imelda (post condition)

A.5. HEC-RAS 2D Model Layout for 12-8-18 and Atlas 14 Events (post condition)

A.6. HEC-RAS 2D Model Layout for Pre-Condition



LEGEND

- BASIN EMBANKMENT
- LIMITS DITCH 600 IMPROVEMENTS
- BASIN EMERGENCY SPILLWAY
- LIMITS OF UNIMPROVED DITCH 600
- DITCH 600 DRAINAGE BOUNDARY
- LIMITS OF GREEN POND

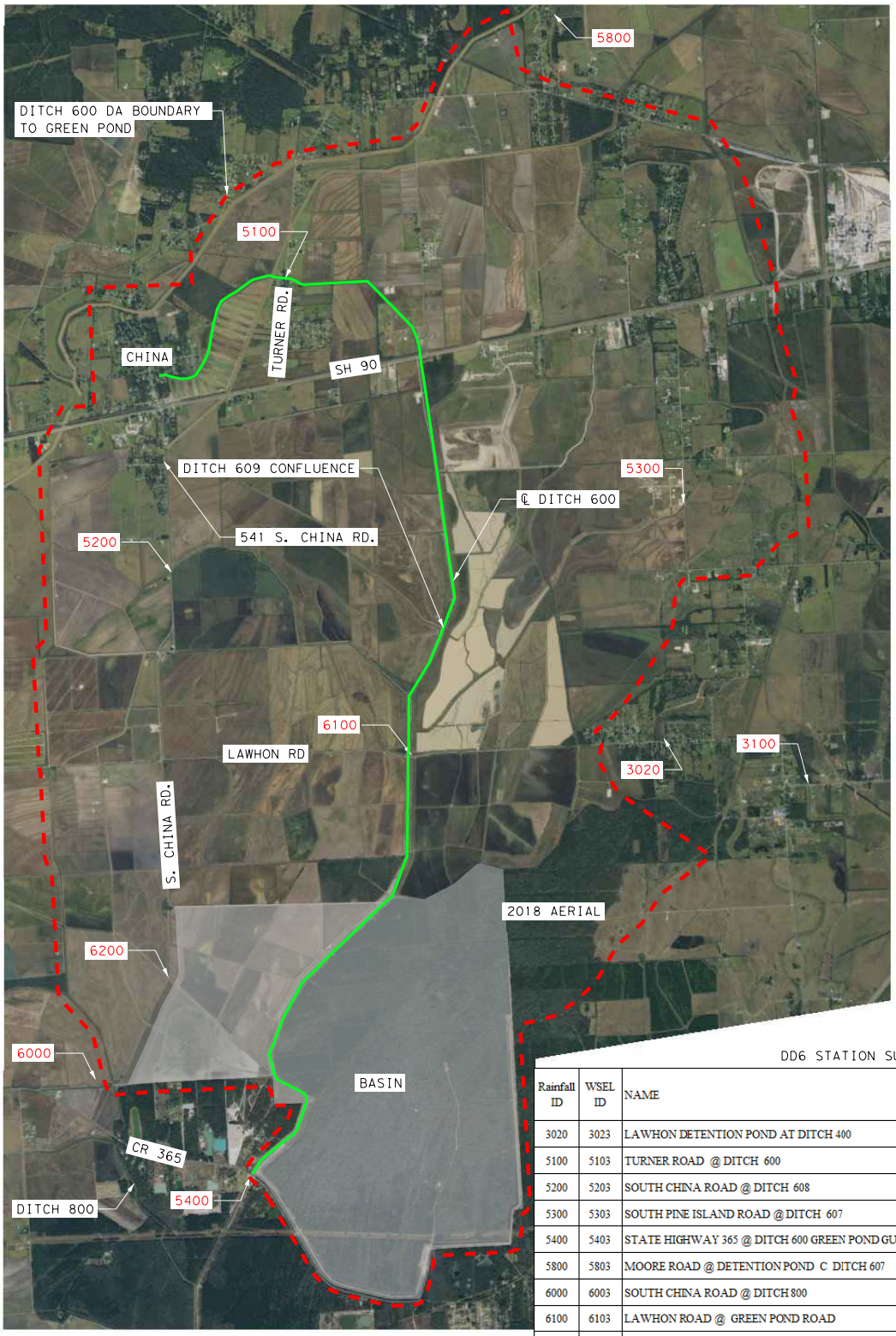
0 0.75 1.5

SCALE: 1"=1.5 MILES

Gauge ENGINEERING
FIRM # 20017
3200 WILCREST DR. #220
HOUSTON, TX 77042

DRAINAGE DISTRICT NO. 6 DD6 JEFFERSON COUNTY, TEXAS

A.1. District Improvements (Basin and Ditch 600)



DD6 STATION SUMMARY TABLE

Rainfall ID	WSEL ID	NAME	LAT	LONG	CAPTURE EVENT (Y/N)?		
					4/17/2015	12/8/2018	IMELDA
3020	3023	LAWHON DETENTION POND AT DITCH 400	30.001	-94.261	N	N	Y
5100	5103	TURNER ROAD @ DITCH 600	30.064	-94.315	Y	Y	Y
5200	5203	SOUTH CHINA ROAD @ DITCH 608	30.016	-94.349	Y	Y	Y
5300	5303	SOUTH PINE ISLAND ROAD @ DITCH 607	30.038	-94.255	N	N	Y
5400	5403	STATE HIGHWAY 365 @ DITCH 600 GREEN POND GULLY	29.945	-94.326	Y	Y	Y
5800	5803	MOORE ROAD @ DETENTION POND C DITCH 607	30.097	-94.273	N	N	Y
6000	6003	SOUTH CHINA ROAD @ DITCH 800	29.958	-94.346	Y	Y	Y
6100	6103	LAWHON ROAD @ GREEN POND ROAD	30.000	-94.299	Y	Y	Y
6200	6203	PINE TREE DITCH 601 @ SOUTH CHINA ROAD	29.972	-94.337	Y	Y	Y

LEGEND

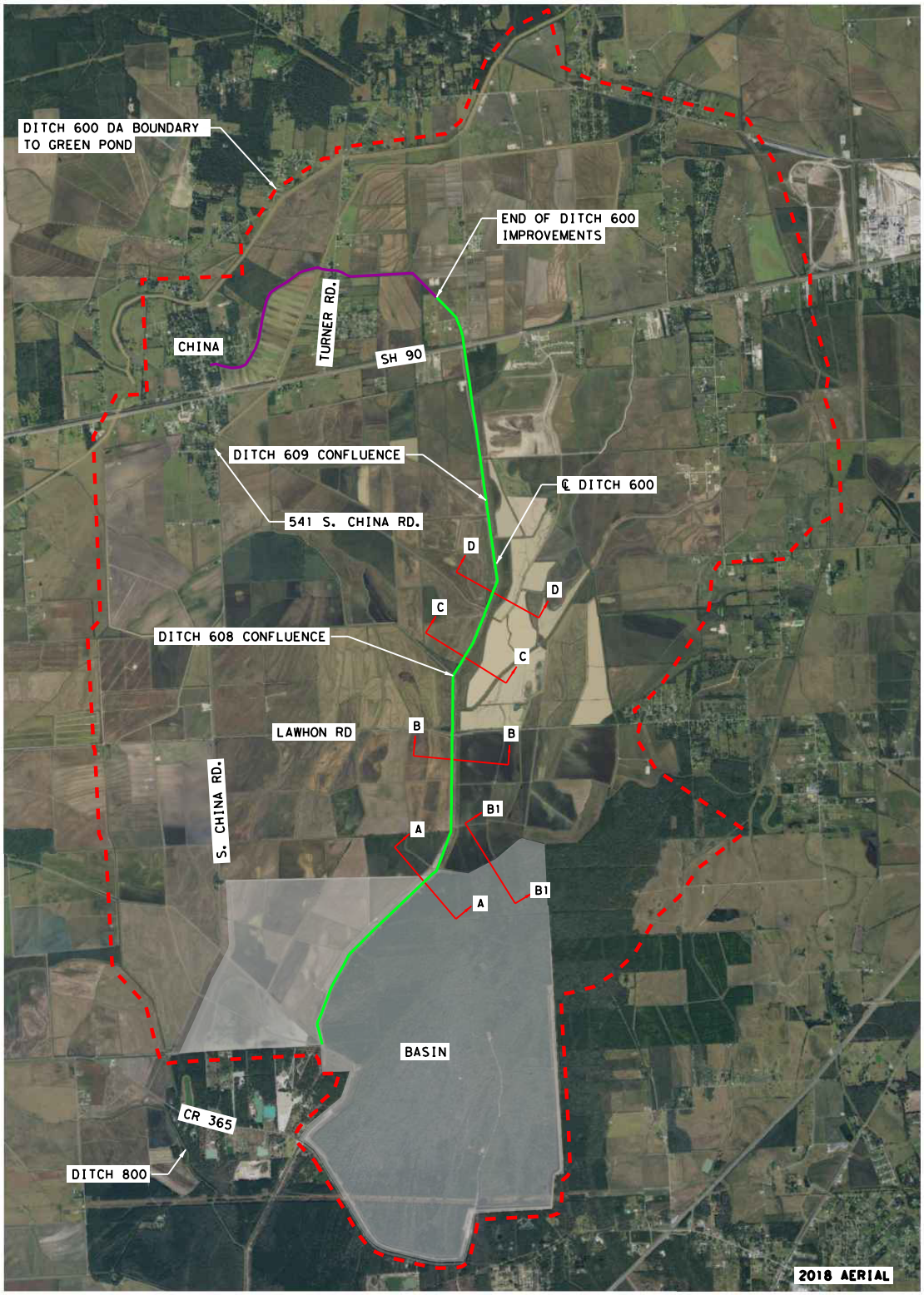
DD6 STATION
DITCH 600 ℄
DITCH 600 DRAINAGE BOUNDARY
LIMITS OF BASIN

0 0.75 1.5
SCALE: 1"=1.5 MILES

Gauge ENGINEERING
FIRM # 20017
3200 WILCREST DR. #220
HOUSTON, TX 77042

DRAINAGE DISTRICT NO 6 DD6 JEFFERSON COUNTY, TEXAS

A.2. DD6 Stations Map



NOTE: SEE EXHIBIT A.3.2 FOR CROSS SECTIONS.

LEGEND

CROSS-SECTION LOCATION

0 0.75 1.5

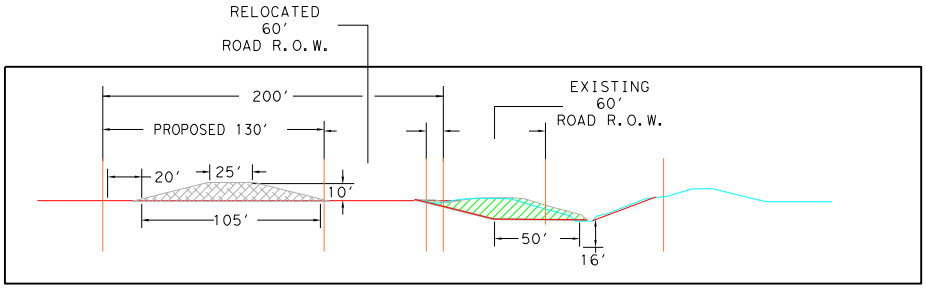
SCALE: 1"=1.5 MILES

Gauge ENGINEERING

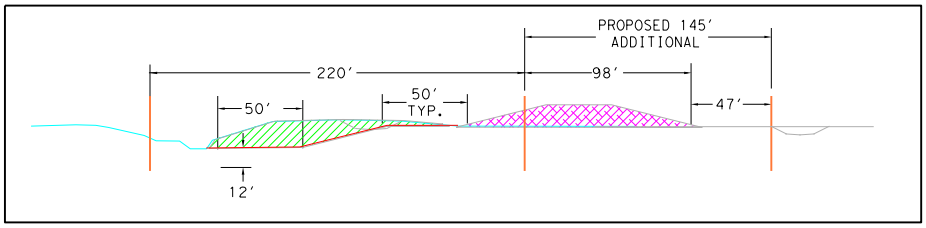
FIRM # 20017
3200 WILCREST DR. #220
HOUSTON, TX 77042

DRAINAGE DISTRICT NO. 6 DD6 JEFFERSON COUNTY, TEXAS

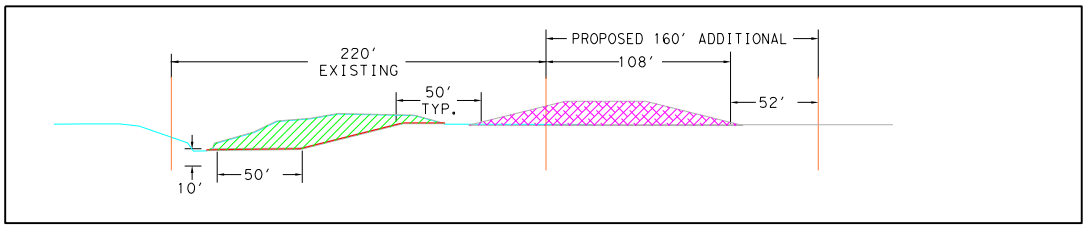
A.3.1 Ditch 600 Improvements (XS MAP)



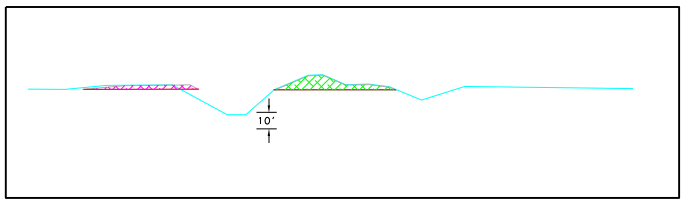
Section E-E



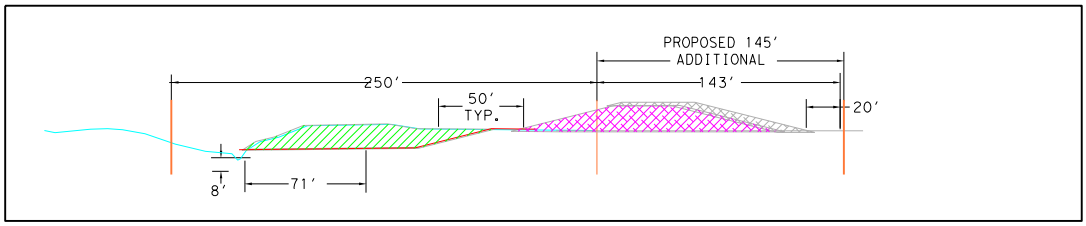
Section D-D



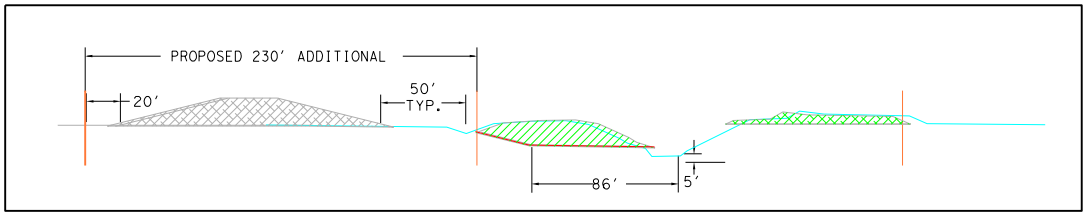
Section C-C



Section B1-B1



Section B-B

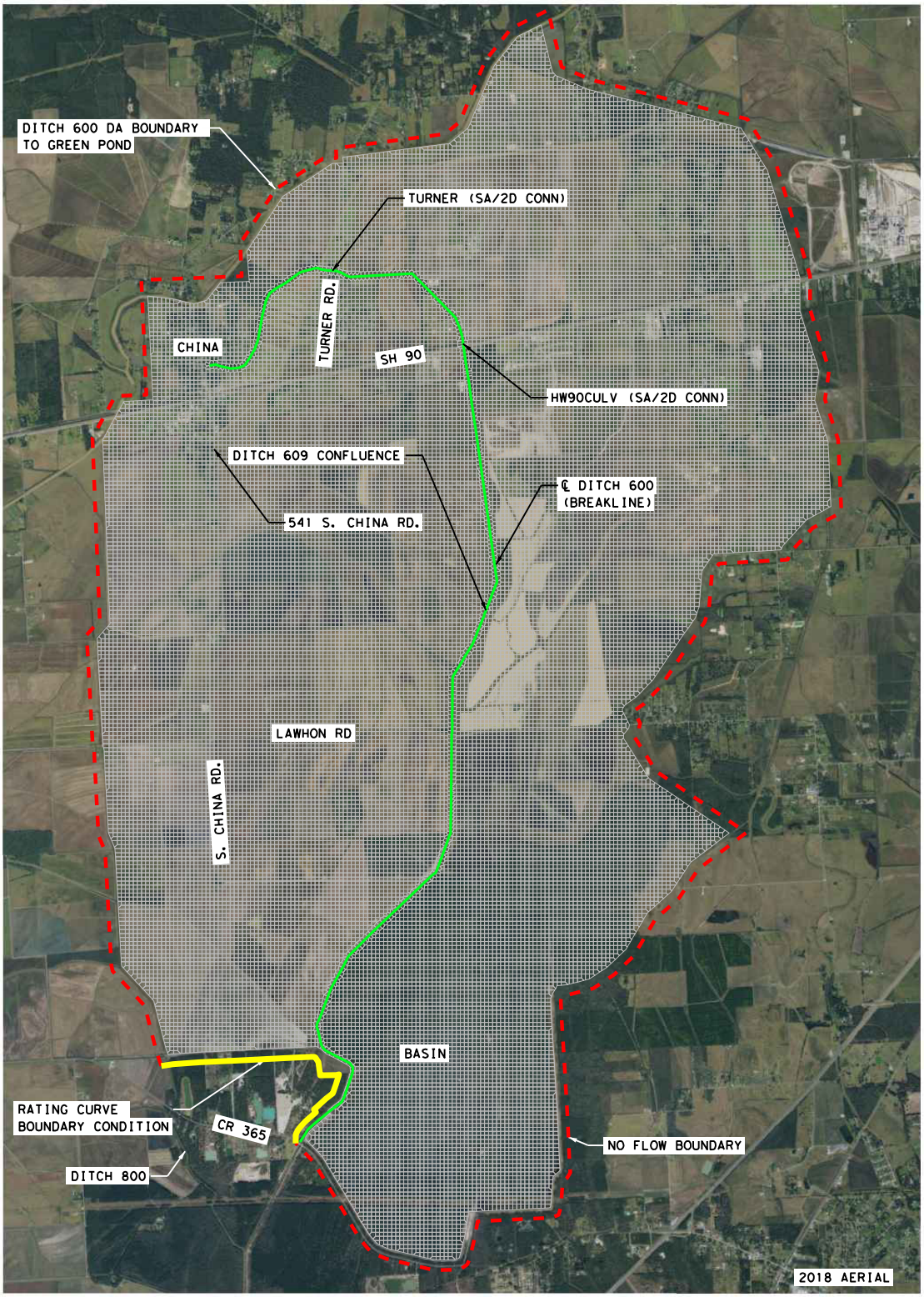


Section A-A

Gauge ENGINEERING
FIRM # 20017
3200 WILCREST DR. #220
HOUSTON, TX 77042

DRAINAGE DISTRICT NO. 6 DD6 JEFFERSON COUNTY, TEXAS

A.3.2 Ditch 600 Improvements (Cross Sections)



LEGEND

- RATING CURVE
- NO FLOW BOUNDARY
- BREAKLINE
- 200'X200' CELLS

0 0.75 1.5

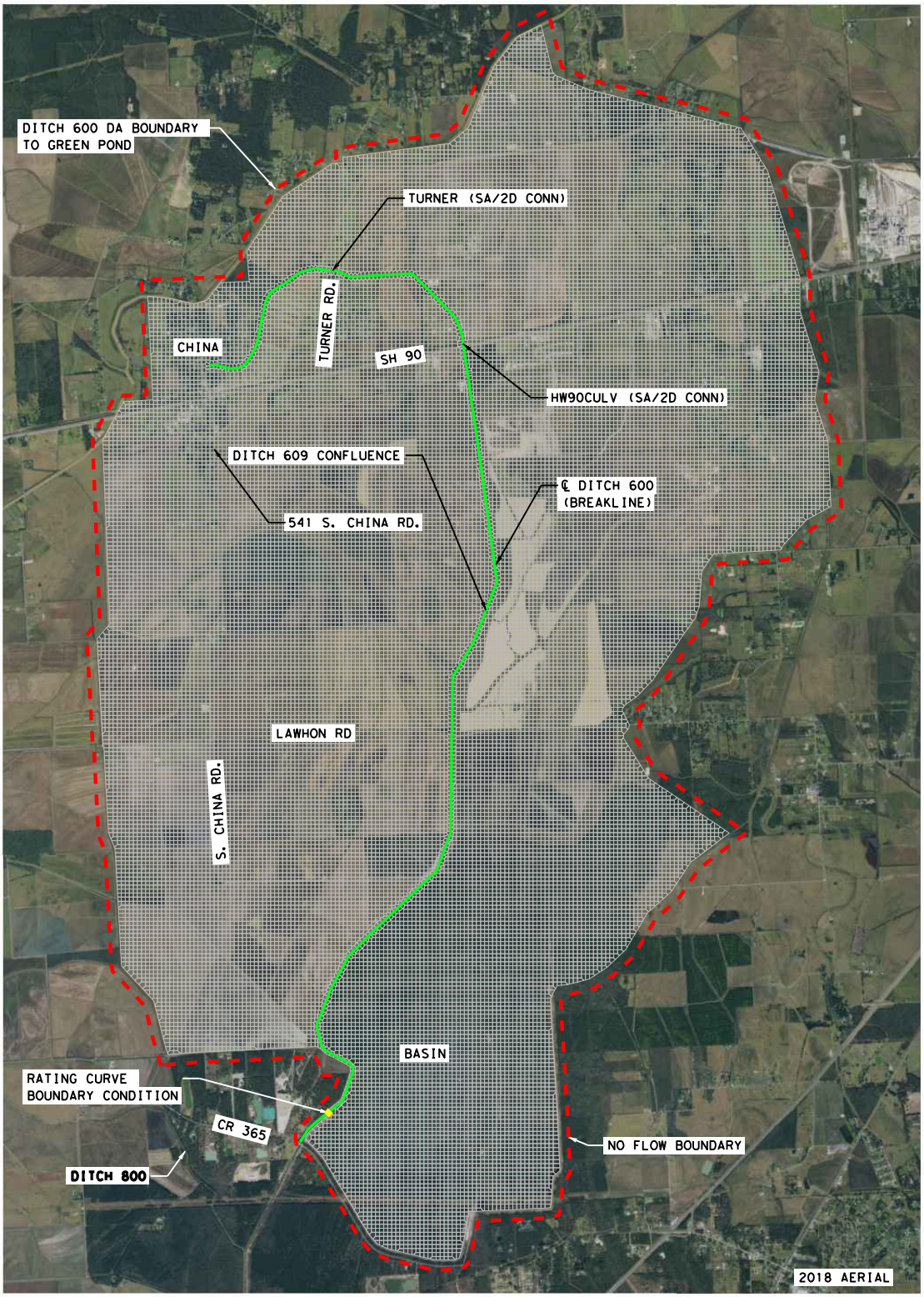
SCALE: 1"=1.5 MILES

Gauge ENGINEERING

FIRM # 20017
3200 WILCREST DR. #220
HOUSTON, TX 77042

DRAINAGE DISTRICT NO 6 DD6 JEFFERSON COUNTY, TEXAS

A.4 HEC-RAS 2D Model Layout for Imelda (post condition)



LEGEND

- RATING CURVE
- NO FLOW BOUNDARY
- BREAKLINE
- 200'X200' CELLS

0 0.75 1.5

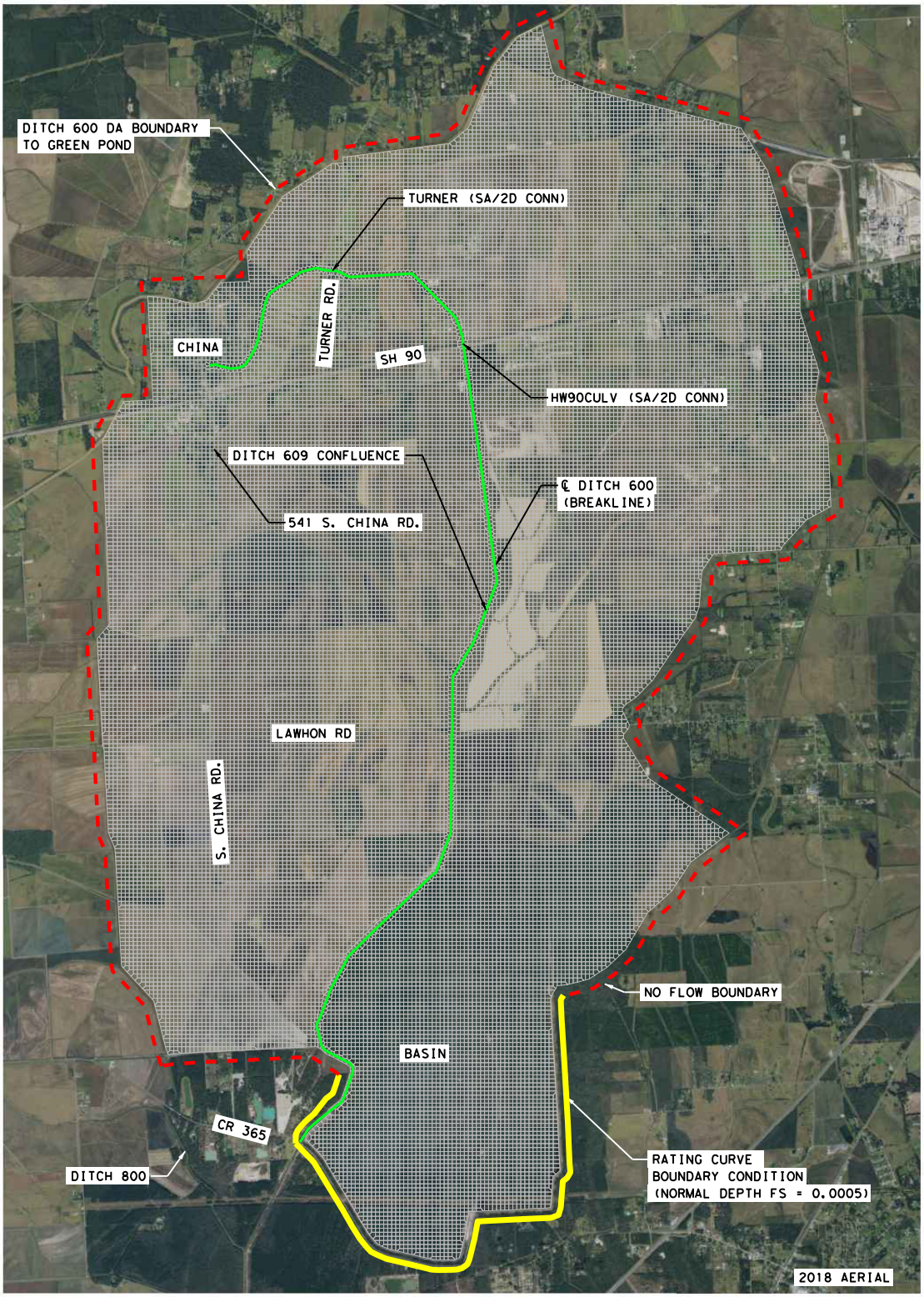
SCALE: 1"=1.5 MILES

Gauge ENGINEERING

FIRM # 20017
3200 WILCREST DR. #220
HOUSTON, TX 77042

DRAINAGE DISTRICT NO. 6 DD6 JEFFERSON COUNTY, TEXAS

A.5. HEC-RAS 2D Model Layout for 12-8-18 and Atlas 14 Events (post condition)



LEGEND

- RATING CURVE
- NO FLOW BOUNDARY
- BREAKLINE
- 200'X200' CELLS

0 0.75 1.5

SCALE: 1"=1.5 MILES

Gauge ENGINEERING

FIRM # 20017
3200 WILCREST DR. #220
HOUSTON, TX 77042

DRAINAGE DISTRICT NO. 6 DD6 JEFFERSON COUNTY, TEXAS

A.6. HEC-RAS 2D Model Layout for Pre-Condition

Appendix B

Supporting Data from District's Models

Appendix B
Summary of HECRAS WSEL From Distric's Models

River Sta	2-YR WSEL (FT)			100-YR WSEL (FT)			500-YR WSEL (FT)		
	PRE	POST	DELTA (POST-PRE)	PRE	POST	DELTA (POST-PRE)	PRE	POST	DELTA (POST-PRE)
1430	17.53	17.58	0.05	19.18	18.71	-0.47	19.9	19.22	-0.68
2215	17.65	17.67	0.02	19.56	19.06	-0.5	20.42	19.72	-0.7
3000	17.85	17.82	-0.03	20.09	19.58	-0.51	21.14	20.41	-0.73
3515	18.94	17.92	-1.02	22.46	21.94	-0.52	23.86	23.22	-0.64
4030	18.95	19.2	0.25	22.46	21.97	-0.49	23.86	23.23	-0.63
4760	18.95	19.19	0.24	22.46	21.97	-0.49	23.86	23.23	-0.63
5490	18.95	19.22	0.27	22.46	21.97	-0.49	23.86	23.23	-0.63
6220	18.98	19.23	0.25	22.46	21.97	-0.49	23.86	23.23	-0.63
7072.5	18.97	19.23	0.26	22.46	21.98	-0.48	23.86	23.23	-0.63
7925	19	19.23	0.23	22.46	21.98	-0.48	23.86	23.23	-0.63
8592.5	18.97	19.38	0.41	22.46	21.98	-0.48	23.86	23.23	-0.63
9260	19.27	19.49	0.22	22.46	21.99	-0.47	23.86	23.23	-0.63
9480	19.26	19.46	0.2	22.46	21.98	-0.48	23.86	23.23	-0.63
9493	-	-	-	-	-	-	-	-	-
9510	19.26	19.46	0.2	22.52	21.98	-0.54	23.94	23.23	-0.71
9563	19.26	19.47	0.21	22.15	21.99	-0.16	23.54	23.23	-0.31
10000	-	-	-	-	-	-	-	-	-
10380	19.57	23.28	3.71	22.65	23.45	0.8	24.05	23.64	-0.41
11180	19.66	23.28	3.62	22.78	23.44	0.66	24.17	23.63	-0.54
11980	19.8	23.28	3.48	22.95	23.47	0.52	24.33	23.65	-0.68
12660	19.95	23.29	3.34	23.16	23.47	0.31	24.53	23.66	-0.87
13340	20.09	23.29	3.2	23.35	23.48	0.13	24.71	23.67	-1.04
14020	20.23	23.29	3.06	23.52	23.5	-0.02	24.86	23.69	-1.17
14995	20.36	23.29	2.93	23.76	23.52	-0.24	25.07	23.72	-1.35
15970	20.59	23.3	2.71	23.79	23.55	-0.24	25.07	23.75	-1.32
16960	20.73	23.31	2.58	24.03	23.6	-0.43	25.07	23.81	-1.26
17950	20.88	23.32	2.44	24.07	23.62	-0.45	25.07	23.84	-1.23
18621.6	20.99	23.32	2.33	24.09	23.63	-0.46	25.07	23.85	-1.22
19293.3	21.1	23.33	2.23	24.13	23.66	-0.47	25.07	23.89	-1.18
19965	21.23	23.33	2.1	24.16	23.69	-0.47	25.08	23.91	-1.17
20668.3	21.39	23.34	1.95	24.2	23.71	-0.49	25.08	23.94	-1.14
21371.6	21.58	23.34	1.76	24.23	23.74	-0.49	25.08	23.96	-1.12
22075	21.77	23.36	1.59	24.26	23.77	-0.49	25.08	24	-1.08
22937.5	21.9	23.37	1.47	24.27	23.81	-0.46	25.08	24.04	-1.04
23800	22.07	23.37	1.3	24.28	23.83	-0.45	25.09	24.06	-1.03
24615	22.22	23.39	1.17	24.3	23.91	-0.39	25.1	24.16	-0.94
25430	22.6	23.42	0.82	24.31	23.99	-0.32	25.1	24.24	-0.86
25635	22.61	23.43	0.82	24.32	24	-0.32	25.11	24.25	-0.86
25641	-	-	-	-	-	-	-	-	-
25654	22.75	23.45	0.7	24.85	24.05	-0.8	25.84	24.28	-1.56
25702	22.69	23.46	0.77	24.85	24.08	-0.77	25.84	24.3	-1.54
26451.3	23.03	23.48	0.45	24.86	24.13	-0.73	25.85	24.35	-1.5
27200.6	22.87	23.46	0.59	24.88	24.09	-0.79	25.86	24.32	-1.54
27950	23.6	23.52	-0.08	24.91	24.27	-0.64	25.87	24.5	-1.37
28905	23.71	23.55	-0.16	24.94	24.33	-0.61	25.88	24.56	-1.32
29860	23.79	23.59	-0.2	24.96	24.4	-0.56	25.89	24.63	-1.26
30815	23.87	23.62	-0.25	24.99	24.44	-0.55	25.9	24.67	-1.23
31770	23.82	23.63	-0.19	25.05	24.29	-0.76	25.92	24.62	-1.3
32725	24.59	23.7	-0.89	25.19	24.75	-0.44	25.95	24.92	-1.03
33680	24.69	23.83	-0.86	25.27	25.06	-0.21	25.98	25.24	-0.74
33897	24.39	23.82	-0.57	23.48	24.79	1.31	23.24	24.84	1.6
33926	-	-	-	-	-	-	-	-	-
33952	24.52	23.81	-0.71	26.31	24.76	-1.55	27.57	24.81	-2.76
34070	24.96	23.81	-1.15	26.36	24.8	-1.56	27.58	24.86	-2.72
34139	24.91	23.82	-1.09	26.37	24.82	-1.55	27.58	24.89	-2.69
34890	25.34	23.86	-1.48	26.48	25.02	-1.46	27.62	25.18	-2.44
35085	25.43	23.88	-1.55	26.52	25.07	-1.45	27.63	25.26	-2.37
35128	25.42	23.88	-1.54	26.51	25.1	-1.41	27.63	25.3	-2.33
35262	25.43	23.99	-1.44	26.52	25.58	-0.94	27.63	25.96	-1.67
36165	25.47	24	-1.47	26.55	25.63	-0.92	27.64	26.03	-1.61
37068	25.5	24.01	-1.49	26.57	25.68	-0.89	27.65	26.1	-1.55
37818.5*	25.54	24.02	-1.52	26.59	25.74	-0.85	27.66	26.17	-1.49
38569.*	25.58	24.04	-1.54	26.61	25.79	-0.82	27.67	26.24	-1.43
39319.5*	25.62	24.05	-1.57	26.64	25.85	-0.79	27.68	26.31	-1.37
40070	25.67	24.07	-1.6	26.67	25.91	-0.76	27.69	26.39	-1.3
40275	25.7	24.07	-1.63	26.69	25.93	-0.76	27.69	26.41	-1.28
40295	-	-	-	-	-	-	-	-	-
40314	25.7	24.12	-1.58	26.69	26.19	-0.5	27.7	26.73	-0.97
40368	25.7	24.13	-1.57	26.69	26.26	-0.43	27.7	26.82	-0.88
41276.*	25.73	24.15	-1.58	26.72	26.31	-0.41	27.71	26.98	-0.73
42184.*	25.81	24.16	-1.65	26.77	26.36	-0.41	27.72	26.92	-0.8
43092.*	25.95	24.18	-1.77	26.87	26.42	-0.45	27.75	26.99	-0.76
44000	26.14	24.2	-1.94	27.06	26.48	-0.58	27.8	27.07	-0.73
44835.4*	26.35	24.22	-2.13	27.3	26.54	-0.76	27.87	27.2	-0.67
45670.8*	26.57	24.24	-2.33	27.56	26.61	-0.95	27.99	27.25	-0.74
46506.2	26.79	24.27	-2.52	27.82	26.69	-1.13	28.16	27.32	-0.84
47341.6*	27.02	24.31	-2.71	28.04	26.84	-1.2	28.31	27.47	-0.84
48177	27.15	24.33	-2.82	28.17	26.88	-1.29	28.42	27.51	-0.91
48185	-	-	-	-	-	-	-	-	-
48204	27.22	24.34	-2.88	28.19	26.98	-1.21	28.44	27.65	-0.79
48260	27.23	24.34	-2.89	28.19	26.98	-1.21	28.43	27.65	-0.78
49134.1*	27.48	24.36	-3.12	28.52	27.04	-1.48	28.75	27.72	-1.03
50008.3*	27.73	24.39	-3.34	28.77	27.11	-1.66	28.97	27.8	-1.17
50882.5*	27.97	24.43	-3.54	28.96	27.18	-1.78	29.15	27.88	-1.27
51756.6*	28.2	24.46	-3.74	29.12	27.27	-1.85	29.3	27.97	-1.33
52630.8*	28.41	24.5	-3.91	29.27	27.35	-1.92	29.45	28.07	-1.38
53505	28.6	24.55	-4.05	29.41	27.45	-1.96	29.59	28.16	-1.43
53685	28.65	24.56	-4.09	29.44	27.47	-1.97	29.62	28.19	-1.43
53800	-	-	-	-	-	-	-	-	-
53925	29.5	25.36	-4.14	30.14	30.08	-0.06	30.27	30.16	-0.11
53925.5	29.49	25.34	-4.15	30.13	30.07	-0.06	30.27	30.15	-0.12
53954	-	-	-	-	-	-	-	-	-
53965	29.63	25.36	-4.27	30.75	30.28	-0.47	31.16	30.45	-0.71
54500.1*	29.63	25.53	-4.1	30.76	30.29	-0.47	31.16	30.46	-0.7
55035	29.63	25.55	-4.08	30.76	30.29	-0.47	31.17	30.46	-0.71
55225	29.62	25.56	-4.06	30.76	30.29	-0.47	31.17	30.45	-0.72
55247	-	-	-	-	-	-	-	-	-
55265	29.62	25.57	-4.05	30.81	30.35	-0.46	31.17	30.54	-0.63
55310	29.66	25.57	-4.09	30.82	30.36	-0.46	31.17	30.56	-0.61
56281.4*	29.67	25.61	-4.06	30.82	30.36	-0.46	31.18	30.56	-0.62
57252.8*	29.69	25.68	-4.01	30.84	30.37	-0.47	31.19	30.56	-0.63
58224.2*	29.83	25.78	-4.05	30.94	30.39	-0.55	31.27	30.58	-0.69
59195.7	30.14	25.57	-4.57	31.54	30.27	-1.27	31.76	30.41	-1.35
60167.1*	30.51	28.47	-2.04	32.44	32.06	-0.38	32.7	32.56	-0.14
61138.5*	30.72	29.04	-1.68	32.97	32.75	-0.22	33.26	33.24	-0.02
62110	30.97	29.69	-1.28	33.63	33.5	-0.13	34.1	34.12	0.02
62320	31.04	29.86	-1.18	33.76	33.64	-0.12	34.2	34.23	0.03
62362	-	-	-	-	-	-	-	-	-
62395	31.42	30.17	-1.25	35.63	35.6	-0.03	35.7	35.71	0.01
62453	31.34	29.9	-1.44	35.59	35.56	-0.03	35.65	35.65	0
62800	31.8	31.26	-0.54	35.73	35.71	-0.02	35.82	35.83	0.01
62990	32	31.58	-0.42	35.82	35.81	-0.01	35.95	35.96	0.01
63017	-	-	-	-	-	-	-	-	-
63040	32.13	31.62	-0.51	36.85	36.42	-0.43	40	40.04	0.04
63150	32.22	31.97	-0.25	36.64	36.62	-0.02	40.02	40.04	0.02
63182	-	-	-	-	-	-	-	-	-
63215	32.3	31.89	-0.41	36.63	37.02	0.39	40.02	40.04	0.02
63275	32.58	32.11	-0.47	37.11	36.89	-0.22	40.02	40.04	0.02
64248.3*	33.49	33.34	-0.15	37.52	37.36	-0.16	40.03	40.04	0.01
65221.7*	33.77	33.65	-0.12	37.62	37.48	-0.14	40.03	40.04	0.01
66195.1*	34.13	34.04	-0.09	37.75	37.62	-0.13	40.03	40.04	0.01
67168.5*	34.55	34.49	-0.06	37.89	37.79	-0.1	40.03	40.04	0.01
68141.8*	35.02	34.98	-0.04	38.06	37.97	-0.09	40.03	40.04	0.01
69115.2*	35.52	35.5	-0.02	38.23	38.16	-0.07	40.03	40.04	0.01
70088.6*	36.06	36.04	-0.02	38.39	38.34	-0.05	40.03	40.04	0.01
71062	36.61	36.6	-0.01	38.52	38.48	-0.04	40.03	40.05	0.02
71092	-	-	-	-	-	-	-	-	-
71100	36.95	36.94	-0.01	38.52	38.49	-0.03	40.03	40.05	0.02
71168	36.99	36.98	-0.01	38.5	38.46	-0.04	40.03	40.05	0.02

Appendix B
Summary of HECRAS WSEL From Distric's Models

River Sta	CHANNEL CONVEYANCE (CFS)			CHANNEL FLOW AREA (SQ-FT)			CHANNEL FLOW (CFS)		
	PRE	POST	POST/PRE	PRE	POST	POST/PRE	PRE	POST	POST/PRE
58224.2*	59,826	185,663	3.10	418	728	1.74	1,209	1,906	1.58
57252.8*	78,434	221,945	2.83	480	822	1.71	620	1,509	2.43
56281.4*	98,082	266,458	2.72	536	922	1.72	326	1,023	3.14
55310	117,207	313,872	2.68	582	1,024	1.76	205	657	3.21
55265	99,697	351,368	3.52	486	1,136	2.34	412	1,431	3.48
55247	-	-	-	-	-	-	-	-	-
55225	104,878	361,650	3.45	510	1,145	2.25	348	1,315	3.77
55035	74,666	332,009	4.45	465	1,044	2.25	117	631	5.39
54500.*	98,405	331,521	3.37	499	1,015	2.03	133	562	4.24
53965	103,709	332,707	3.21	463	994	2.15	231	1,103	4.77
53954	-	-	-	-	-	-	-	-	-
53925.5	128,081	321,051	2.51	615	993	1.62	943	2,141	2.27
53925	128,181	351,200	2.74	615	1,057	1.72	701	1,735	2.48
53800	-	-	-	-	-	-	-	-	-
53685	143,486	372,704	2.60	673	1,211	1.80	1,098	4,224	3.85
53505	85,233	369,827	4.34	469	1,217	2.59	1,081	4,224	3.91
52630.8*	93,414	381,432	4.08	521	1,249	2.40	1,174	4,172	3.55
51756.6*	99,986	395,261	3.95	567	1,284	2.26	1,273	4,224	3.32
50882.5*	104,693	412,306	3.94	608	1,322	2.18	1,404	4,223	3.01
50008.3*	107,295	430,491	4.01	640	1,362	2.13	1,563	4,224	2.70
49134.1*	107,164	449,717	4.20	662	1,404	2.12	1,769	4,224	2.39
48260	102,857	470,561	4.57	667	1,449	2.17	2,036	4,224	2.07
48204	128,426	471,172	3.67	647	1,448	2.24	1,669	4,224	2.53
48185	-	-	-	-	-	-	-	-	-
48177	128,837	530,995	4.12	643	1,583	2.46	1,565	4,057	2.59
47341.6*	132,071	554,370	4.20	654	1,630	2.49	1,515	3,988	2.63
46506.2	134,318	566,811	4.22	663	1,656	2.50	1,901	5,691	2.99
45670.8*	136,461	587,931	4.31	671	1,700	2.53	1,882	5,561	2.95
44835.4*	139,644	610,676	4.37	682	1,746	2.56	1,641	5,369	3.27
44000	144,088	625,194	4.34	696	1,778	2.55	1,303	6,085	4.67
43092.*	151,156	649,288	4.30	719	1,827	2.54	980	6,087	6.21
42184.*	158,870	673,354	4.24	743	1,878	2.53	785	6,087	7.75
41276.*	167,249	709,838	4.24	769	1,954	2.54	666	3,383	5.08
40368	175,945	730,010	4.15	795	1,988	2.50	594	6,088	10.25
40314	174,122	727,919	4.18	770	1,972	2.56	574	7,433	12.94
40295	-	-	-	-	-	-	-	-	-
40275	177,955	698,097	3.92	782	1,917	2.45	586	7,433	12.69
40070	203,129	693,493	3.41	960	1,955	2.04	917	7,433	8.10
39319.5*	199,117	713,776	3.58	925	1,988	2.15	810	7,433	9.18
38569.*	194,740	730,073	3.75	891	2,020	2.27	715	7,433	10.40
37818.5*	189,048	749,825	3.97	858	2,053	2.39	631	7,433	11.79
37068	190,586	771,820	4.05	823	2,084	2.53	506	7,432	14.70
36165	202,980	797,609	3.93	864	2,157	2.50	624	7,433	11.92
35262	216,101	827,065	3.83	910	2,232	2.45	679	7,433	10.95
35128	315,591	797,259	2.53	1,166	2,113	1.81	1,357	14,729	10.85
35085	267,631	785,563	2.94	1,042	2,078	2.00	975	14,720	15.09
34890	233,643	755,328	3.23	1,074	2,074	1.93	1,687	14,730	8.73
34139	253,472	753,023	2.97	1,013	2,075	2.05	1,793	14,730	8.22
34070	280,757	752,971	2.68	1,228	2,067	1.68	1,814	14,730	8.12
33952	262,624	742,978	2.83	1,099	2,060	1.87	1,796	14,731	8.20
33926	-	-	-	-	-	-	-	-	-
33897	146,435	921,364	6.29	738	2,319	3.14	11,755	14,731	1.25
33680	212,487	732,070	3.45	1,058	2,048	1.94	856	4,923	5.75
32725	213,068	715,074	3.36	1,047	1,991	1.90	1,401	9,790	6.99
31770	222,532	660,157	2.97	1,059	1,971	1.86	1,286	10,666	8.30
30815	231,261	712,368	3.08	1,065	2,034	1.91	910	6,575	7.22
29860	238,564	732,464	3.07	1,063	2,056	1.93	765	5,452	7.12
28905	246,398	762,518	3.09	1,051	2,057	1.96	809	5,847	7.23
27950	243,267	770,530	3.17	1,090	2,080	1.91	781	6,067	7.77
27200.6	251,188	730,836	2.91	1,028	2,093	2.04	1,030	8,657	8.41
26451.3	259,450	751,029	2.89	1,051	2,124	2.02	711	5,191	7.30
25702	275,394	782,927	2.84	1,094	2,150	1.96	763	5,854	7.68
25654	281,522	781,394	2.78	1,105	2,148	1.94	552	6,761	12.25
25641	-	-	-	-	-	-	-	-	-
25635	245,334	777,977	3.17	987	2,142	2.17	672	6,159	9.17
25430	237,249	780,373	3.29	1,066	2,148	2.01	640	6,033	9.43
24615	335,675	786,160	2.34	1,071	2,163	2.02	942	6,858	7.28
23800	351,013	802,361	2.29	1,061	2,139	2.02	1,038	7,709	7.42
22937.5	357,293	772,309	2.16	1,093	2,186	2.00	811	5,744	7.09
22075	393,149	783,278	1.99	1,172	2,207	1.88	815	5,383	6.61
21371.6	363,111	778,731	2.14	1,121	2,216	1.98	757	5,494	7.25
20668.3	347,915	832,430	2.39	1,100	2,229	2.03	452	5,051	11.16
19965	346,415	850,535	2.46	1,110	2,253	2.03	452	5,169	11.44
19293.3	382,018	855,557	2.24	1,171	2,271	1.94	497	5,251	10.56
18621.6	418,407	882,186	2.11	1,221	2,285	1.87	543	5,890	10.84
17950	440,137	898,386	2.04	1,259	2,305	1.83	421	4,576	10.87
16960	460,019	869,647	1.89	1,403	2,341	1.67	326	4,746	14.57
15970	471,447	901,543	1.91	1,473	2,365	1.61	319	6,146	19.27
14995	452,272	916,344	2.03	1,550	2,394	1.54	276	5,667	20.53
14020	598,981	931,396	1.55	1,869	2,474	1.32	6,705	5,065	0.76
13340	522,282	943,814	1.81	1,681	2,447	1.46	6,729	4,939	0.73
12660	479,775	933,763	1.95	1,530	2,473	1.62	6,709	4,153	0.62
11980	442,225	978,202	2.21	1,385	2,472	1.78	6,657	3,808	0.57
11180	473,117	972,324	2.06	1,439	2,522	1.75	6,714	5,032	0.75
10380	518,958	976,826	1.88	1,554	2,572	1.66	6,744	417	0.06
		AVG =	3.21			2.07			6.78

Appendix C

Summary of Survey Data and LIDAR Adjustments

Appendix C
Survey Data, 2017, and 2006 LIDAR Adjustment

Source	ID	Y (ft)	X (ft)	DESCRIPTION	Survey Z (ft)	LIDAR.2017 Z (ft)	LIDAR.2006 Z (ft)	LIDAR.2017 Z - Survey Z (ft)	LIDAR.2006 Z - Survey Z (ft)
TOPO	1	13921050.56	3448717.965	CP PIPE	33.97	24.40	18.43	-9.57	-15.53
TOPO	2	13921013.44	3448717.253	CP 6065	25.13	23.40	18.97	-1.73	-6.16
TOPO	3	13926972.13	3449415.152	Base Setup	21.11	19.93	28.62	-1.18	7.51
TOPO	4	13931728.14	3452066.544	CP IR	35.00	34.50	22.49	-0.50	-12.51
TOPO	5	13937817.57	3456150.509	Base Setup	37.09	36.26	23.73	-0.83	-13.36
TOPO	6	13941472.47	3456196.469	CP IR	35.92	35.10	22.34	-0.81	-13.58
TOPO	7	13947186.42	3457479.338	CP IR	24.29	23.19	24.84	-1.10	0.55
TOPO	8	13954112.53	3457385.076	CP IR	25.87	24.77	26.50	-1.10	0.63
TOPO	9	13960117.66	3456425.169	CP IR	27.12	26.39	26.60	-0.73	-0.52
TOPO	20	13941129.11	3455898.289	TBM SM	26.27	21.84	25.69	-4.43	-0.59
TOPO	21	13945626.25	3460225.041	BM BRASS DISK	17.63	13.70	20.22	-3.93	2.60
TOPO	22	13960489.97	3456527.855	BM K1200 ROVER	25.96	18.08	24.04	-7.89	-1.92
TOPO	23	13960490.04	3456527.862	BM K1200 NET	24.95	18.08	24.04	-6.87	-0.91
TOPO	24	13947186.51	3457479.344	CP #7 NET	23.11	23.19	24.84	0.08	1.73
TOPO	25	13954112.64	3457385.097	CP #8 NET	24.75	24.77	26.50	0.02	1.75
TOPO	26	13960117.7	3456425.188	CP #9 NET	26.03	26.39	26.60	0.35	0.56
TOPO	27	13956582.86	3438090.215	BM THM15	39.27	39.10	41.23	-0.16	1.96
TOPO	50	13921050.57	3448717.979	CP 1	32.87	24.40	18.78	-8.47	-14.10
TOPO	51	13896213.13	3461890.435	CP G1018	12.21	12.15	12.89	-0.07	0.68
TOPO	101	13920933.5	3448397.747	EC	24.98	4.08	15.13	-20.90	-9.85
TOPO	102	13921091.1	3448411.848	NG	21.04	20.45	21.81	-0.59	0.77
TOPO	103	13921069.63	3448403.893	NG	21.54	20.91	20.89	-0.63	-0.65
TOPO	104	13921064.93	3448413.602	NG	21.01	19.57	20.91	-1.44	-0.09
TOPO	105	13921061.96	3448417.699	DT	20.50	19.39	19.30	-1.11	-1.20
TOPO	106	13921060.06	3448421.678	DB	18.29	18.93	16.66	0.64	-1.63
TOPO	107	13921059.63	3448422.302	DB	16.75	18.93	16.66	2.18	-0.09
TOPO	108	13921056.02	3448426.243	DB	15.10	14.70	14.19	-0.40	-0.91
TOPO	109	13921053.53	3448432.153	DB	13.28	12.99	13.99	-0.29	0.71
TOPO	110	13921048.94	3448436.975	DB	11.63	11.85	13.90	0.22	2.28
TOPO	111	13921047.13	3448437.012	DB	9.89	10.67	13.89	0.78	4.00
TOPO	112	13921045.16	3448439.961	DB	9.02	9.78	13.94	0.76	4.92
TOPO	113	13921045.74	3448445.151	DB	6.42	8.21	14.11	1.79	7.70
TOPO	114	13921041.58	3448455.128	DB	5.48	5.22	14.32	-0.26	8.84
TOPO	115	13921037.2	3448456.353	DB	4.58	4.87	14.13	0.28	9.55
TOPO	116	13921036.6	3448457.107	DB	3.85	4.32	14.22	0.47	10.37
TOPO	117	13921036.21	3448458.264	DB	2.92	4.32	14.22	1.40	11.30
TOPO	118	13921035.62	3448459.131	DB	2.72	4.32	14.22	1.60	11.51
TOPO	119	13922477.89	3449671.122	NG	22.19	20.32	18.94	-1.87	-3.25
TOPO	120	13922464.87	3449680.423	NG	23.19	21.19	20.77	-1.99	-2.42
TOPO	121	13922456.08	3449687.218	NG	23.67	22.55	21.20	-1.12	-2.47
TOPO	122	13922444.36	3449695.414	NG	24.03	22.66	21.62	-1.38	-2.41
TOPO	123	13922437.48	3449701.253	DT	24.43	22.45	21.85	-1.98	-2.58
TOPO	124	13922431.47	3449706.122	DB	22.28	20.89	21.09	-1.39	-1.19
TOPO	125	13922421.57	3449715.242	DB	18.22	17.79	21.50	-0.43	3.28
TOPO	126	13922408.09	3449725.008	DB	12.11	9.79	19.03	-2.33	6.91
TOPO	127	13922401.03	3449730.609	DB	8.43	6.47	18.55	-1.96	10.12
TOPO	128	13922394.48	3449735.652	DB	4.81	4.10	18.07	-0.70	13.26
TOPO	129	13922395.1	3449736.323	WL	4.80	4.10	17.80	-0.70	13.00
TOPO	130	13922734.96	3449972.8	NG	21.72	20.41	19.28	-1.31	-2.44
TOPO	131	13922725.15	3449981.182	SE	22.16	20.62	19.44	-1.54	-2.72
TOPO	132	13922716.7	3449988.529	ST	24.62	22.15	19.97	-2.47	-4.65
TOPO	133	13922710.76	3449993.227	SB	25.59	23.46	20.35	-2.13	-5.24
TOPO	134	13922704.03	3449999.453	SB	25.88	23.41	20.79	-2.47	-5.08
TOPO	135	13922697.34	3450003.19	ST	25.79	23.77	20.73	-2.01	-5.06
TOPO	136	13922687.79	3450008.741	SB	22.51	21.19	20.50	-1.32	-2.00
TOPO	137	13922679.83	3450014.556	SB	20.12	18.80	20.56	-1.32	0.44
TOPO	138	13922667.59	3450023.288	SB	15.08	13.58	21.14	-1.50	6.06
TOPO	139	13922659.13	3450029.442	SB	12.53	11.06	19.28	-1.47	6.75
TOPO	140	13922653.47	3450033.988	SB	10.84	9.69	18.14	-1.15	7.30
TOPO	141	13922647.57	3450037.403	SB	9.93	8.55	17.60	-1.38	7.67
TOPO	142	13922644.75	3450040.039	SB	8.66	7.97	17.50	-0.69	8.84
TOPO	143	13922639.3	3450045.135	SB	7.75	5.85	17.19	-1.90	9.44
TOPO	144	13922635.92	3450047.823	SB	6.98	5.79	16.96	-1.19	9.98
TOPO	145	13922631.69	3450050.669	SB	5.02	5.05	16.87	0.03	11.85
TOPO	146	13923981.39	3450740.822	NG	20.78	19.52	20.75	-1.26	-0.03
TOPO	147	13923978.48	3450747.46	SE	21.53	20.44	20.89	-1.09	-0.64
TOPO	148	13923973.98	3450760.07	ST	25.37	23.75	21.26	-1.62	-4.11
TOPO	149	13923972.61	3450762.861	SE	25.52	24.14	20.61	-1.38	-4.91
TOPO	150	13923968.05	3450772.35	SB	25.73	24.11	21.77	-1.62	-3.96
TOPO	151	13923966.82	3450780.022	DT	26.05	24.55	23.27	-1.50	-2.78
TOPO	152	13923964.06	3450787.023	DB	23.79	23.55	23.04	-0.24	-0.75
TOPO	153	13923961.17	3450796.415	DB	20.69	19.47	23.24	-1.21	2.55
TOPO	154	13923958.22	3450804.496	DB	17.42	16.65	23.36	-0.77	5.95
TOPO	155	13923955.16	3450815.308	DB	14.48	13.84	18.37	-0.65	3.89
TOPO	156	13923953.73	3450819.723	DB	13.12	12.21	15.92	-0.91	2.80
TOPO	157	13923952.82	3450822.178	DB	12.12	10.65	15.94	-1.47	3.82
TOPO	158	13923951.5	3450829.197	DB	11.14	9.18	15.84	-1.96	4.70
TOPO	159	13923950.93	3450830.493	DB	9.59	9.18	15.84	-0.40	6.26
TOPO	160	13923949.42	3450834.259	DB	8.12	7.95	15.84	-0.16	7.73
TOPO	161	13923948.83	3450838.321	DB	7.29	6.71	15.82	-0.59	8.53
TOPO	162	13923949.28	3450846.594	DB	7.20	4.44	15.84	-2.76	8.64
TOPO	163	13923949.57	3450848.161	DB	5.36	4.44	15.83	-0.92	10.48
TOPO	164	13923948.43	3450850.169	DE	4.06	4.28	15.82	0.22	11.75
TOPO	165	13925187.66	3449945.159	SE	25.57	24.58	21.65	-0.99	-3.92
TOPO	166	13925203.37	3449955.369	SB	27.08	25.35	22.95	-1.72	-4.13
TOPO	167	13925212.76	3449961.938	ST	27.85	26.41	25.13	-1.44	-2.72
TOPO	168	13925221.18	3449969.73	SB	28.02	26.69	27.16	-1.33	-0.86
TOPO	169	13925232.43	3449972.765	DT	28.11	26.62	27.54	-1.49	-0.57
TOPO	170	13925249.95	3449981.338	DB	22.83	21.87	26.20	-0.96	3.37
TOPO	171	13925257.37	3449983.237	DB	21.34	20.24	25.73	-1.10	4.39
TOPO	172	13925262.73	3449984.5	DB	19.54	18.53	24.67	-1.01	5.13
TOPO	173	13925267.25	3449987.19	DB	18.35	16.47	24.49	-1.88	6.14

TOPO	174	13925271.49	3449990.083	DB	17.78	15.78	24.46	-1.99	6.68
TOPO	175	13925284.4	3449995.864	DB	14.41	12.20	19.48	-2.21	5.07
TOPO	176	13925287.16	3449998.41	DB	13.41	11.77	17.40	-1.63	3.99
TOPO	177	13925300.27	3450000.93	DB	10.83	9.46	15.90	-1.37	5.07
TOPO	178	13925306.43	3450002.343	DB	9.67	7.86	16.33	-1.81	6.66
TOPO	179	13925309.33	3450003.215	DB	7.81	7.11	16.13	-0.70	8.32
TOPO	180	13925314.97	3450007.048	DB	7.09	5.83	15.92	-1.26	8.83
TOPO	181	13925318.13	3450010.465	DB	6.57	5.32	15.89	-1.24	9.33
TOPO	182	13925319.99	3450010.443	DB	5.75	5.00	15.89	-0.75	10.14
TOPO	183	13925322.27	3450010.891	DB	5.29	4.82	15.87	-0.47	10.58
TOPO	184	13925320.22	3450010.324	WL	5.95	5.00	15.89	-0.95	9.94
TOPO	185	13927044.09	3449254.602	SE	21.01	19.48	23.69	-1.52	2.68
TOPO	186	13927037.92	3449266.175	SB	21.32	19.83	23.65	-1.50	2.33
TOPO	187	13927034.93	3449273.103	SB	21.72	19.77	24.01	-1.95	2.29
TOPO	188	13927033.72	3449278.797	DT	22.06	20.41	24.16	-1.64	2.10
TOPO	189	13927029.27	3449287.265	DB	18.46	18.27	23.94	-0.18	5.48
TOPO	190	13927022.69	3449298.721	DB	16.72	16.33	20.01	-0.39	3.28
TOPO	191	13927021.93	3449301.096	DB	15.88	14.47	18.40	-1.41	2.53
TOPO	192	13927017.93	3449306.331	DB	14.75	13.45	16.80	-1.30	2.06
TOPO	193	13927016.88	3449313.418	DB	12.88	10.95	16.81	-1.93	3.93
TOPO	194	13927013.23	3449322.213	DB	10.46	9.11	17.09	-1.34	6.64
TOPO	195	13927013.06	3449323.525	DB	9.72	9.11	17.09	-0.60	7.37
TOPO	196	13927011.83	3449326.389	DB	9.20	8.72	17.27	-0.47	8.08
TOPO	197	13927011.76	3449327.207	DB	8.09	7.98	17.14	-0.11	9.06
TOPO	198	13927009.64	3449329.978	DB	8.33	6.30	17.14	-2.03	8.81
TOPO	199	13927009.39	3449333.3	DB	6.99	5.48	17.01	-1.51	10.02
TOPO	200	13927009.22	3449334.299	DB	5.42	5.48	16.75	0.06	11.33
TOPO	201	13927012.52	3449334.306	WL	6.47	6.17	16.75	-0.30	10.29
TOPO	202	13928929.82	3449967.854	SE	21.08	20.38	21.57	-0.69	0.49
TOPO	203	13928925.75	3449977.067	SB	21.74	20.78	21.76	-0.96	0.02
TOPO	204	13928922.31	3449987.181	SB	22.61	21.66	22.20	-0.96	-0.41
TOPO	205	13928915.57	3449997.016	DT	23.23	22.10	22.46	-1.13	-0.77
TOPO	206	13928909.74	3450009.33	DB	19.00	19.56	22.45	0.56	3.45
TOPO	207	13928905.55	3450020.763	DB	16.12	15.41	22.82	-0.72	6.69
TOPO	208	13928902.79	3450028.316	DB	13.68	13.84	23.43	0.16	9.74
TOPO	209	13928900.1	3450035.591	DB	11.12	10.10	23.56	-1.02	12.44
TOPO	210	13928888.95	3450045.137	DB	9.53	8.65	23.96	-0.88	14.43
TOPO	211	13928875.12	3450069.897	DB	9.07	7.95	23.18	-1.12	14.12
TOPO	212	13928868.34	3450083.703	DB	9.30	7.99	17.53	-1.32	8.23
TOPO	213	13928864.98	3450092.062	DB	9.03	7.89	17.40	-1.14	8.37
TOPO	214	13928864.85	3450095.2	DB	7.53	7.82	17.52	0.29	9.99
TOPO	215	13928862.48	3450097.995	DB	7.30	6.85	17.27	-0.45	9.98
TOPO	216	13928860.64	3450100.007	DB	5.17	6.18	17.27	1.02	12.11
TOPO	217	13928861.42	3450098.342	WL	6.55	6.85	17.27	0.30	10.72
TOPO	218	13930648.57	3451055.656	SE	20.79	20.10	22.23	-0.68	1.44
TOPO	219	13930637.87	3451062.206	SB	21.69	20.71	22.06	-0.97	0.37
TOPO	220	13930629.38	3451067.521	SB	22.35	21.63	22.58	-0.72	0.23
TOPO	221	13930620.82	3451074.387	DT	23.04	21.95	22.69	-1.09	-0.35
TOPO	222	13930611.88	3451082.93	DB	19.95	19.60	22.64	-0.35	2.69
TOPO	223	13930608.58	3451084.646	DB	19.00	18.80	22.82	-0.20	3.82
TOPO	224	13930606.79	3451088.239	DB	17.05	17.41	22.81	0.36	5.76
TOPO	225	13930601.25	3451093.501	DB	14.81	15.09	24.57	0.28	9.76
TOPO	226	13930597.55	3451099.716	DB	13.28	13.32	24.90	0.03	11.61
TOPO	227	13930594.7	3451103.287	DB	11.66	12.30	24.53	0.65	12.88
TOPO	228	13930586.44	3451112.186	DB	9.81	8.94	24.95	-0.87	15.14
TOPO	229	13930581.15	3451121.682	DB	8.70	7.71	25.19	-0.99	16.49
TOPO	230	13930563.08	3451135.082	DB	8.62	7.72	21.49	-0.90	12.87
TOPO	231	13930544.14	3451154.649	DB	8.50	7.35	19.65	-1.15	11.15
TOPO	232	13930540.77	3451159.663	DB	8.91	7.50	20.26	-1.41	11.35
TOPO	233	13930538.01	3451163.658	DB	9.39	7.93	20.25	-1.46	10.86
TOPO	234	13930536.36	3451165.382	DB	5.60	7.93	20.74	2.33	15.14
TOPO	235	13930537.58	3451165.24	WL	6.64	7.93	20.74	1.29	14.09
TOPO	236	13932026.53	3452501.686	SE	22.80	22.18	23.95	-0.62	1.14
TOPO	237	13932018.25	3452511.334	SB	23.18	22.45	24.65	-0.73	1.47
TOPO	238	13932008.78	3452517.845	DT	23.76	22.92	24.81	-0.83	1.05
TOPO	239	13932001.85	3452521.319	DB	21.92	21.64	25.19	-0.28	3.27
TOPO	240	13931990.7	3452529.152	DB	18.56	18.59	25.36	0.03	6.80
TOPO	241	13931982.57	3452540.456	DB	15.15	13.40	25.67	-1.75	10.52
TOPO	242	13931976.97	3452545.197	DB	12.43	11.69	25.79	-0.74	13.36
TOPO	243	13931970.72	3452555.136	DB	11.13	10.28	25.64	-0.85	14.51
TOPO	244	13931961.37	3452563.953	DB	9.40	8.74	24.34	-0.66	14.94
TOPO	245	13931943.99	3452577.48	DB	9.09	8.37	20.16	-0.72	11.07
TOPO	246	13931939.36	3452583.273	DB	9.67	8.52	20.92	-1.14	11.25
TOPO	247	13931937.72	3452586.576	DB	10.65	8.67	20.64	-1.98	9.99
TOPO	248	13931935.93	3452588.767	DB	9.86	9.31	20.89	-0.55	11.03
TOPO	249	13931931.44	3452589.838	DB	6.23	8.96	21.22	2.73	14.98
TOPO	250	13931932.32	3452589.131	WL	7.04	8.96	21.22	1.92	14.18
TOPO	251	13933416.9	3453944.333	SE	21.85	21.87	22.62	0.02	0.76
TOPO	252	13933406.67	3453952.601	SB	22.79	22.57	23.15	-0.22	0.36
TOPO	253	13933399.51	3453957.732	SB	23.14	22.98	22.67	-0.16	-0.46
TOPO	254	13933391.57	3453970.038	DT	23.01	22.51	22.97	-0.49	-0.03
TOPO	255	13933385.2	3453975.73	DB	20.17	21.24	24.96	1.07	4.79
TOPO	256	13933378.93	3453981.396	DB	17.63	18.15	25.34	0.53	7.71
TOPO	257	13933370.59	3453987.801	DB	15.18	15.16	25.12	-0.02	9.94
TOPO	258	13933366.93	3453992.396	DB	12.99	13.81	24.81	0.81	11.82
TOPO	259	13933354.58	3454004.534	DB	11.10	10.58	24.85	-0.52	13.76
TOPO	260	13933340.04	3454021.094	DB	10.03	9.32	19.27	-0.71	9.24
TOPO	261	13933331.84	3454028.595	DB	10.00	9.32	18.10	-0.68	8.11
TOPO	262	13933328.41	3454032.128	DB	10.07	9.28	18.16	-0.79	8.10
TOPO	263	13933325.46	3454034.66	DB	10.74	9.30	18.13	-1.44	7.39
TOPO	264	13933322.96	3454034.227	DB	8.72	9.24	18.13	0.52	9.41
TOPO	265	13933323.72	3454037.611	WL	7.25	9.74	18.17	2.49	10.93
TOPO	266	13934848.29	3455205.93	SE	23.06	23.08	22.83	0.02	-0.24
TOPO	267	13934832.56	3455222.568	SB	24.23	23.99	22.36	-0.24	-1.87

TOPO	268	13934822.84	3455234.123	SB	24.90	24.49	22.20	-0.42	-2.70
TOPO	269	13934816.45	3455240.795	DT	25.42	25.08	23.22	-0.33	-2.19
TOPO	270	13934809.49	3455250.347	DB	23.46	23.65	24.18	0.19	0.72
TOPO	271	13934809.79	3455260.963	DB	20.42	19.72	24.88	-0.69	4.46
TOPO	272	13934806.39	3455268.541	DB	18.43	18.52	25.16	0.09	6.73
TOPO	273	13934802.86	3455276.518	DB	15.38	15.31	24.87	-0.07	9.49
TOPO	274	13934798.77	3455286.338	DB	14.66	13.59	24.57	-1.07	9.91
TOPO	275	13934796.73	3455297.781	DB	12.46	12.01	22.91	-0.45	10.45
TOPO	276	13934792.43	3455312.207	DB	11.41	10.83	18.74	-0.58	7.33
TOPO	277	13934787.28	3455324.694	DB	10.74	9.95	18.52	-0.79	7.78
TOPO	278	13934787.45	3455328.851	DB	9.52	6.94	17.97	-2.58	8.45
TOPO	279	13934785.81	3455330.222	DB	6.59	6.94	18.20	0.35	11.61
TOPO	280	13934785.22	3455328.588	WL	7.61	6.94	18.20	-0.67	10.59
TOPO	281	13936696.24	3455783.393	NG	23.31	22.82	24.94	-0.48	1.64
TOPO	282	13936695.58	3455792.104	SE	23.67	23.33	25.35	-0.34	1.68
TOPO	283	13936692.92	3455800.975	ST	24.62	24.28	25.99	-0.34	1.37
TOPO	284	13936690.69	3455823.167	SB	25.17	24.43	25.46	-0.73	0.30
TOPO	285	13936688.33	3455835.338	SB	25.06	24.37	25.22	-0.69	0.15
TOPO	286	13936693.19	3455843.856	DT	24.54	23.93	24.79	-0.60	0.25
TOPO	287	13936695.34	3455851.066	DB	23.10	21.46	24.04	-1.64	0.94
TOPO	288	13936696.66	3455856.912	DB	20.44	18.89	21.32	-1.54	0.89
TOPO	289	13936694.82	3455863.652	DB	17.73	17.54	18.06	-0.20	0.33
TOPO	290	13936695.38	3455869.994	DB	14.51	14.59	18.09	0.08	3.58
TOPO	291	13936693.27	3455877.893	DB	11.31	11.24	18.10	-0.07	6.79
TOPO	292	13936697.03	3455881.446	DB	9.83	10.11	18.10	0.28	8.28
TOPO	293	13936696.52	3455882.515	WL	8.18	7.40	18.10	-0.78	9.93
TOPO	294	13936696.62	3455883.505	DB	7.25	8.08	18.10	0.83	10.85
TOPO	295	13938700.6	3455774.79	NG	23.10	22.15	23.97	-0.95	0.88
TOPO	296	13938699.05	3455799.061	SE	23.29	22.37	24.29	-0.92	1.00
TOPO	297	13938698.83	3455815.09	SB	24.12	23.06	26.84	-1.05	2.72
TOPO	298	13938697.45	3455823.708	ST	24.81	23.79	27.07	-1.02	2.27
TOPO	299	13938694.19	3455871.29	DT	23.86	23.14	24.14	-0.72	0.28
TOPO	300	13938694.46	3455881.194	DB	20.39	19.63	22.74	-0.76	2.35
TOPO	301	13938693.8	3455887.421	DB	18.15	17.42	19.97	-0.74	1.82
TOPO	302	13938692.8	3455893.663	DB	15.67	17.73	18.69	2.07	3.02
TOPO	303	13938692.52	3455898.132	DB	13.83	13.31	18.49	-0.52	4.66
TOPO	304	13938692.42	3455901.654	DB	13.22	11.44	18.30	-1.78	5.08
TOPO	305	13938691.37	3455904.568	DB	10.44	9.78	18.30	-0.65	7.87
TOPO	306	13938691.31	3455905.942	DB	10.10	9.78	18.30	-0.32	8.20
TOPO	307	13938689.91	3455907.819	DB	7.58	7.74	18.34	0.16	10.76
TOPO	308	13938687.63	3455906.954	WL	8.55	7.13	18.34	-1.42	9.79
TOPO	309	13940693.71	3455820.888	NG	23.56	22.24	25.10	-1.32	1.55
TOPO	310	13940692.4	3455838.019	SE	23.69	22.83	26.33	-0.86	2.64
TOPO	311	13940691.13	3455848.378	ST	24.48	23.18	25.81	-1.30	1.33
TOPO	312	13940690.48	3455894.071	DT	23.43	22.14	23.59	-1.29	0.16
TOPO	313	13940690.31	3455900.577	DB	21.25	19.85	21.52	-1.40	0.27
TOPO	314	13940690.13	3455906.035	DB	19.35	18.51	20.01	-0.84	0.66
TOPO	315	13940689.74	3455911.459	DB	17.49	15.66	19.09	-1.83	1.60
TOPO	316	13940689.81	3455916.723	DB	15.84	12.92	18.06	-2.93	2.21
TOPO	317	13940690.06	3455921.917	DB	13.56	12.52	18.11	-1.04	4.55
TOPO	318	13940690.59	3455934.001	DB	12.75	11.58	18.19	-1.16	5.44
TOPO	319	13940690.09	3455935.872	DB	11.42	10.10	18.19	-1.33	6.76
TOPO	320	13940689.81	3455938.418	DB	10.43	7.67	18.10	-2.76	7.67
TOPO	321	13940689.44	3455940.922	DB	8.15	7.45	18.10	-0.69	9.95
TOPO	322	13942692.26	3455885.076	DE	22.69	22.62	23.69	-0.06	1.01
TOPO	323	13942691.96	3455887.419	SB	24.24	22.62	23.69	-1.62	-0.55
TOPO	324	13942692.18	3455896.652	RE	25.33	24.11	25.01	-1.22	-0.32
TOPO	325	13942692.49	3455903.962	RC	25.52	24.31	25.86	-1.21	0.34
TOPO	326	13942693.17	3455911.549	RE	25.49	24.26	25.85	-1.23	0.36
TOPO	327	13942692.32	3455927.927	DT	24.15	22.92	24.87	-1.23	0.71
TOPO	328	13942692.54	3455934.941	DB	21.47	18.81	21.31	-2.67	-0.17
TOPO	329	13942692.9	3455941.265	DB	19.90	18.38	20.61	-1.53	0.70
TOPO	330	13942693.76	3455948.641	DB	18.31	16.92	18.61	-1.39	0.29
TOPO	331	13942694.06	3455951.981	DB	17.45	16.50	18.04	-0.95	0.59
TOPO	332	13942694.49	3455954.848	DB	16.82	15.34	18.05	-1.47	1.23
TOPO	333	13942694.44	3455961.225	DB	14.19	12.97	18.06	-1.22	3.87
TOPO	334	13942694.55	3455964.507	DB	13.66	12.81	18.06	-0.85	4.40
TOPO	335	13942694.67	3455968.231	DB	14.25	12.44	18.07	-1.81	3.81
TOPO	336	13942695.3	3455971.744	DB	12.11	10.94	18.32	-1.17	6.21
TOPO	337	13942696.06	3455974.081	DB	11.65	10.71	18.32	-0.94	6.67
TOPO	338	13942695.73	3455976.845	DB	9.12	8.83	18.30	-0.29	9.18
TOPO	339	13942696.58	3455975.887	WL	10.36	8.67	18.30	-1.69	7.94
TOPO	340	13944631.25	3456267.931	NG	23.84	23.21	23.94	-0.63	0.10
TOPO	341	13944625.47	3456279.494	RE	24.51	23.19	24.74	-1.32	0.23
TOPO	342	13944620.87	3456286.836	RC	24.53	23.43	24.75	-1.10	0.22
TOPO	343	13944616.59	3456292.819	RE	24.02	22.65	24.70	-1.36	0.69
TOPO	344	13944610.45	3456303.698	DT	22.75	21.93	22.82	-0.82	0.08
TOPO	345	13944607.27	3456309.124	DB	20.45	18.74	20.50	-1.71	0.04
TOPO	346	13944603.97	3456314.729	DB	18.55	15.97	20.81	-2.58	2.26
TOPO	347	13944601.09	3456320.478	DB	15.45	13.42	20.98	-2.03	5.53
TOPO	348	13944598.48	3456324.848	DB	13.88	12.79	21.03	-1.09	7.15
TOPO	349	13944597.57	3456326.142	DB	12.93	10.85	20.26	-2.08	7.33
TOPO	350	13944595.17	3456329.991	DB	11.92	10.08	20.30	-1.83	8.39
TOPO	351	13944594.46	3456331.313	DB	10.27	10.19	20.30	-0.08	10.03
TOPO	352	13944593.81	3456331.91	DE	9.87	10.19	20.73	0.33	10.87
TOPO	353	13944593.63	3456330.095	WL	11.15	10.19	20.73	-0.96	9.58
TOPO	354	13946387.76	3457186.4	NG	25.07	23.68	25.27	-1.39	0.20
TOPO	355	13946382.41	3457199.929	RE	25.24	24.00	25.34	-1.24	0.10
TOPO	356	13946379.28	3457207.304	RC	25.20	23.72	25.26	-1.47	0.06
TOPO	357	13946376.84	3457213.927	RE	24.95	23.64	25.31	-1.31	0.36
TOPO	358	13946372.61	3457223.487	DT	23.51	22.18	24.63	-1.34	1.12
TOPO	359	13946371.02	3457228.6	DB	21.47	19.83	22.08	-1.64	0.61
TOPO	360	13946369.43	3457232.504	DB	19.28	18.36	20.85	-0.92	1.57
TOPO	361	13946368.46	3457237.045	DB	17.82	16.54	19.02	-1.28	1.20

TOPO	362	13946366.87	3457242.603	DB	15.40	15.46	19.01	0.07	3.61
TOPO	363	13946365.64	3457247.337	DB	12.64	10.72	18.99	-1.92	6.34
TOPO	364	13946366.12	3457250.832	DB	11.83	10.86	18.90	-0.97	7.07
TOPO	365	13946365.96	3457251.992	DE	11.22	10.86	18.73	-0.35	7.51
TOPO	366	13946366.51	3457250.414	WL	12.19	10.86	18.90	-1.33	6.71
TOPO	367	13940687.63	3455941.647	DE	8.09	7.45	18.10	-0.63	10.01
TOPO	368	13940688.61	3455945.077	DC	8.17	7.45	18.13	-0.71	9.96
TOPO	369	13940689.05	3455948.919	DE	8.45	7.59	18.16	-0.86	9.71
TOPO	370	13938689.34	3455921.838	DB	8.11	7.44	18.17	-0.67	10.06
TOPO	371	13938688.04	3455921.543	DE	8.02	7.36	18.21	-0.66	10.19
TOPO	372	13938689.16	3455915.034	DC	8.16	7.36	18.26	-0.81	10.10
TOPO	373	13938689.48	3455907.924	DE	7.68	7.74	18.34	0.05	10.65
TOPO	374	13936692.05	3455884.218	DB	6.92	8.74	17.95	1.83	11.04
TOPO	375	13936692.16	3455886.006	DE	6.47	8.74	17.96	2.27	11.49
TOPO	376	13936692.09	3455892.226	DC	6.60	7.26	17.99	0.66	11.39
TOPO	377	13936694.19	3455896.752	DE	6.82	6.98	18.17	0.16	11.34
TOPO	378	13936693.89	3455898.761	DB	7.46	7.19	18.18	-0.28	10.72
TOPO	379	13936693.48	3455901.136	DB	7.58	8.94	18.18	1.36	10.60
TOPO	380	13934783.16	3455343.677	DE	6.06	6.54	17.76	0.48	11.70
TOPO	381	13934785.68	3455337.909	DC	5.99	6.53	17.79	0.54	11.80
TOPO	382	13934786.41	3455332.215	DE	5.75	6.77	17.99	1.02	12.23
TOPO	383	13934787.21	3455330.691	DB	6.70	6.94	17.97	0.23	11.27
TOPO	384	13948251.38	3457913.282	NG	24.58	23.52	24.94	-1.06	0.36
TOPO	385	13948248.03	3457923.852	RE	25.11	23.95	25.20	-1.16	0.09
TOPO	386	13948244.85	3457931.192	RC	25.15	23.72	25.61	-1.43	0.45
TOPO	387	13948241.69	3457938.22	RE	25.00	23.86	25.52	-1.14	0.52
TOPO	388	13948238.12	3457948.409	DT	24.21	22.48	24.86	-1.73	0.65
TOPO	389	13948237	3457953.129	DB	23.06	21.80	23.88	-1.26	0.82
TOPO	390	13948234.63	3457959.222	DB	21.31	20.83	21.18	-0.47	-0.12
TOPO	391	13948231.74	3457966.572	DB	19.03	18.73	19.19	-0.30	0.16
TOPO	392	13948229.48	3457973.163	DB	17.42	16.39	19.10	-1.03	1.68
TOPO	393	13948225.81	3457981.884	DB	17.09	16.71	19.18	-0.39	2.09
TOPO	394	13948222.63	3457983.763	DB	15.92	14.06	19.16	-1.87	3.24
TOPO	395	13948221.91	3457985.272	DB	12.95	14.06	19.31	1.11	6.37
TOPO	396	13948221.04	3457985.197	WL	13.83	14.06	19.31	0.22	5.48
TOPO	397	13950159.49	3457903.148	DE	23.54	22.54	24.56	-1.01	1.02
TOPO	398	13950159.95	3457905.432	DT	25.02	23.54	24.97	-1.48	-0.06
TOPO	399	13950160.26	3457908.349	RE	25.31	24.04	25.71	-1.27	0.40
TOPO	400	13950161.47	3457915.89	RC	25.55	24.36	25.97	-1.20	0.42
TOPO	401	13950162.48	3457922.978	RE	25.63	24.57	26.03	-1.07	0.39
TOPO	402	13950165.97	3457944.86	DT	25.19	24.18	25.34	-1.01	0.15
TOPO	403	13950167.06	3457950.724	DB	23.60	23.43	24.92	-0.17	1.32
TOPO	404	13950167.54	3457956.023	DB	20.60	20.01	22.88	-0.58	2.28
TOPO	405	13950167.98	3457959.887	DB	19.01	20.01	21.27	1.00	2.26
TOPO	406	13950168.33	3457966.051	DB	17.28	17.72	20.17	0.44	2.90
TOPO	407	13950168.06	3457969.94	DB	16.32	16.72	20.13	0.40	3.81
TOPO	408	13950168.43	3457971.167	DB	13.70	15.39	20.13	1.69	6.43
TOPO	409	13950167.4	3457970.512	WL	15.04	15.39	20.13	0.36	5.09
TOPO	410	13952140.48	3457630.733	DE	24.97	24.09	25.30	-0.87	0.34
TOPO	411	13952140.68	3457634.756	DT	25.72	24.78	26.33	-0.94	0.62
TOPO	412	13952141.33	3457638.582	RE	25.74	24.94	26.63	-0.80	0.89
TOPO	413	13952142.5	3457645.839	RC	26.03	25.30	26.63	-0.74	0.60
TOPO	414	13952143.29	3457652.885	RE	26.13	25.38	26.68	-0.75	0.55
TOPO	415	13952145.39	3457670.21	DT	24.79	23.85	25.43	-0.95	0.64
TOPO	416	13952146.43	3457675.64	DB	22.86	23.30	23.87	0.44	1.01
TOPO	417	13952147.2	3457680.612	DB	21.10	21.75	22.62	0.64	1.52
TOPO	418	13952147.9	3457684.799	DB	19.44	19.21	19.88	-0.23	0.44
TOPO	419	13952149.09	3457689.76	DB	17.49	17.82	19.90	0.33	2.42
TOPO	420	13952149.88	3457694.168	DB	17.17	16.52	19.91	-0.64	2.74
TOPO	421	13952150.09	3457696.774	DB	14.09	13.95	19.90	-0.14	5.82
TOPO	422	13952149.86	3457696.162	WL	15.12	16.52	19.91	1.40	4.79
TOPO	423	13954120.28	3457341.97	SE	25.20	26.09	25.49	0.89	0.29
TOPO	424	13954123.21	3457356.464	RE	25.72	25.09	26.14	-0.63	0.42
TOPO	425	13954124.7	3457364.304	RC	26.40	25.38	26.60	-1.02	0.19
TOPO	426	13954125.76	3457371.212	RE	26.44	25.45	26.65	-0.99	0.21
TOPO	427	13954126.67	3457385.93	DT	25.55	24.41	25.89	-1.14	0.34
TOPO	428	13954127.27	3457392.55	DB	24.09	22.61	24.90	-1.47	0.81
TOPO	429	13954127.72	3457399.061	DB	21.71	21.29	22.67	-0.42	0.96
TOPO	430	13954128.38	3457405.286	DB	19.29	18.95	20.59	-0.34	1.31
TOPO	431	13954129.32	3457411.008	DB	17.70	17.13	20.45	-0.57	2.75
TOPO	432	13954129.84	3457415.015	DB	18.07	17.44	20.45	-0.63	2.38
TOPO	433	13954130.46	3457417.464	DB	17.87	17.27	20.52	-0.60	2.65
TOPO	434	13954131.24	3457420.771	DB	15.80	14.93	20.59	-0.87	4.79
TOPO	435	13954131.66	3457422.453	DB	13.73	14.93	20.59	1.21	6.86
TOPO	436	13954131.68	3457420.81	WL	15.60	14.93	20.59	-0.67	4.99
TOPO	437	13954147.17	3457580.047	SE	24.65	24.00	25.81	-0.65	1.16
TOPO	438	13954144.79	3457563.783	ST	25.71	24.61	27.92	-1.10	2.21
TOPO	439	13954141.67	3457542.712	DT	25.90	24.90	26.09	-0.99	0.19
TOPO	440	13954140.25	3457533.595	DB	23.98	23.63	25.36	-0.35	1.38
TOPO	441	13954139.37	3457528.204	DB	22.74	21.57	25.12	-1.17	2.38
TOPO	442	13954137.98	3457520.861	DB	21.35	20.14	24.82	-1.21	3.47
TOPO	443	13954135.99	3457512.315	DB	19.28	17.78	27.34	-1.50	8.06
TOPO	444	13954135.7	3457503.183	DB	17.97	17.04	30.52	-0.93	12.55
TOPO	445	13954133.33	3457469.57	DB	17.06	16.12	26.82	-0.93	9.76
TOPO	446	13954130.81	3457431.274	DB	16.84	15.30	20.66	-1.54	3.82
TOPO	447	13954130.01	3457429.58	DB	14.47	15.30	20.66	0.83	6.19
TOPO	448	13954128.5	3457427.874	DE	13.78	13.93	20.35	0.15	6.57
TOPO	449	13952168.96	3457850.741	SE	24.54	23.74	25.83	-0.80	1.29
TOPO	450	13952165.33	3457835.695	SB	25.47	24.77	27.85	-0.70	2.38
TOPO	451	13952161.8	3457810.197	DT	25.61	24.40	24.99	-1.21	-0.62
TOPO	452	13952161.17	3457803.1	DB	23.99	22.85	25.46	-1.14	1.47
TOPO	453	13952159.5	3457794.595	DB	22.09	20.52	27.41	-1.57	5.33
TOPO	454	13952157.29	3457781.286	DB	18.76	17.79	31.66	-0.97	12.90
TOPO	455	13952155.84	3457770.875	DB	17.04	16.28	31.58	-0.76	14.54

TOPO	456	13952154	3457745.462	DB	16.28	15.58	29.07	-0.69	12.79
TOPO	457	13952150.66	3457710.841	DB	16.21	14.90	20.97	-1.31	4.76
TOPO	458	13952150.21	3457709.069	DB	13.77	14.90	20.97	1.13	7.20
TOPO	459	13952149.95	3457707.409	DE	13.12	13.28	20.24	0.16	7.12
TOPO	460	13950190.42	3458126.943	SE	24.12	23.13	25.54	-0.99	1.42
TOPO	461	13950188.64	3458114.732	SB	25.22	24.11	26.62	-1.11	1.40
TOPO	462	13950185.46	3458096.803	SB	25.81	24.75	27.17	-1.06	1.37
TOPO	463	13950182.1	3458084.892	DT	25.38	23.02	27.04	-2.36	1.65
TOPO	464	13950181.32	3458078.364	DB	23.48	21.47	27.58	-2.02	4.09
TOPO	465	13950182.14	3458071.505	DB	21.68	20.52	28.09	-1.16	6.41
TOPO	466	13950179.51	3458059.785	DB	18.04	16.55	31.16	-1.48	13.13
TOPO	467	13950176.53	3458046.055	DB	16.04	15.03	31.99	-1.01	15.95
TOPO	468	13950175.34	3458039.719	DB	15.55	14.78	30.47	-0.77	14.92
TOPO	469	13950166.08	3458009.918	DB	15.36	13.93	23.82	-1.43	8.47
TOPO	470	13950162.61	3457988.033	DB	15.76	13.07	19.62	-2.69	3.86
TOPO	471	13950162.15	3457986.938	DB	14.02	13.07	19.54	-0.95	5.52
TOPO	472	13950160.86	3457985.44	DB	13.54	13.13	19.54	-0.41	6.00
TOPO	473	13950160.3	3457983.465	DE	12.75	13.13	19.71	0.37	6.96
TOPO	474	13948165.32	3458135.684	SE	23.94	22.61	24.38	-1.32	0.44
TOPO	475	13948171.06	3458120.275	SB	24.95	23.69	25.86	-1.26	0.91
TOPO	476	13948178.81	3458098.309	DT	25.43	23.47	26.99	-1.95	1.57
TOPO	477	13948183.4	3458088.216	DB	22.64	21.76	26.85	-0.89	4.21
TOPO	478	13948187.35	3458079.383	DB	20.38	19.27	25.52	-1.11	5.14
TOPO	479	13948191.19	3458068.913	DB	16.97	16.40	28.56	-0.57	11.59
TOPO	480	13948195.78	3458056.101	DB	15.33	14.02	32.40	-1.31	17.07
TOPO	481	13948203.34	3458030.139	DB	14.34	13.07	28.23	-1.26	13.89
TOPO	482	13948217.98	3457996.805	DB	15.15	13.49	19.34	-1.66	4.20
TOPO	483	13948218.37	3457995.669	DB	13.54	13.49	19.34	-0.06	5.80
TOPO	484	13948215.6	3457990.923	DE	12.47	12.42	19.35	-0.04	6.88
TOPO	485	13946305.88	3457395.323	SE	24.28	22.82	24.31	-1.46	0.03
TOPO	486	13946310.78	3457380.218	SB	24.99	23.68	26.45	-1.31	1.47
TOPO	487	13946317.79	3457363.148	DT	24.99	23.43	26.12	-1.55	1.13
TOPO	488	13946322.29	3457354.726	DB	23.03	22.15	24.34	-0.88	1.31
TOPO	489	13946325.64	3457348.12	DB	21.20	20.24	24.96	-0.97	3.75
TOPO	490	13946332.74	3457333.318	DB	16.70	16.34	28.37	-0.36	11.68
TOPO	491	13946340.97	3457317.515	DB	14.20	13.48	30.16	-0.72	15.96
TOPO	492	13946354.95	3457291.349	DB	13.60	12.25	27.90	-1.35	14.30
TOPO	493	13946359.14	3457281.263	DB	13.87	12.29	24.06	-1.58	10.19
TOPO	494	13946361.29	3457277.339	DB	14.36	12.52	21.94	-1.84	7.59
TOPO	495	13946363.97	3457271.894	DB	12.33	11.86	19.60	-0.47	7.28
TOPO	496	13946365.79	3457259.701	DB	12.22	12.19	18.53	-0.02	6.31
TOPO	497	13946365.77	3457256.606	DE	11.37	12.19	18.55	0.83	7.19
TOPO	498	13944511.72	3456460.286	SE	25.21	24.10	24.55	-1.11	-0.66
TOPO	499	13944523.44	3456444.681	SB	26.37	25.07	24.99	-1.30	-1.38
TOPO	500	13944529.87	3456434.734	DT	26.25	25.18	25.91	-1.07	-0.34
TOPO	501	13944534.81	3456427.705	DB	23.97	23.55	28.70	-0.42	4.73
TOPO	502	13944539.32	3456420.568	DB	21.70	21.62	30.77	-0.07	9.07
TOPO	503	13944546.79	3456408.094	DB	17.59	17.87	31.93	0.27	14.34
TOPO	504	13944557.36	3456392.044	DB	13.67	12.82	32.63	-0.85	18.96
TOPO	505	13944576.09	3456363.751	DB	12.55	11.49	26.72	-1.06	14.17
TOPO	506	13944588.77	3456337.657	DB	12.10	10.25	20.78	-1.85	8.68
TOPO	507	13944589.5	3456335.901	DB	10.79	10.25	20.78	-0.54	9.99
TOPO	508	13944589.66	3456334.378	DE	9.99	10.21	21.16	0.22	11.17
TOPO	509	13942685.29	3456144.472	SE	22.67	21.20	23.86	-1.47	1.20
TOPO	510	13942686.9	3456116.743	SB	23.66	22.22	23.82	-1.45	0.16
TOPO	511	13942687.7	3456097.745	DT	23.74	22.64	24.59	-1.10	0.85
TOPO	512	13942688.3	3456084.688	DB	20.47	19.52	28.54	-0.95	8.07
TOPO	513	13942688.85	3456073.668	DB	18.08	17.21	29.00	-0.87	10.92
TOPO	514	13942689.22	3456060.743	DB	15.09	14.06	29.74	-1.03	14.64
TOPO	515	13942688.59	3456048.257	DB	12.44	11.86	29.05	-0.59	16.61
TOPO	516	13942689.57	3456012.143	DB	11.89	10.65	24.94	-1.24	13.06
TOPO	517	13942689.07	3455992.676	DB	12.25	10.81	18.38	-1.44	6.13
TOPO	518	13942689.15	3455988.14	DB	12.66	10.75	18.35	-1.90	5.69
TOPO	519	13942689.01	3455986.22	DB	10.03	10.96	18.32	0.94	8.30
TOPO	520	13942689.91	3455983.51	DE	8.57	8.88	18.29	0.32	9.73
TOPO	521	13956101.2	3457068.532	DE	23.84	22.92	25.46	-0.91	1.63
TOPO	522	13956101.62	3457071.28	DT	25.29	23.37	25.08	-1.92	-0.21
TOPO	523	13956101.73	3457074.499	RE	25.73	24.29	26.12	-1.43	0.40
TOPO	524	13956102.82	3457082.042	RC	26.13	24.77	26.55	-1.36	0.42
TOPO	525	13956104.47	3457089.693	RE	26.23	24.83	26.61	-1.40	0.38
TOPO	526	13956105.76	3457099.06	SB	25.91	24.68	26.41	-1.23	0.51
TOPO	527	13956106.33	3457105.134	DT	25.45	24.36	26.12	-1.09	0.67
TOPO	528	13956107.42	3457112.32	DB	22.61	20.88	23.41	-1.74	0.80
TOPO	529	13956107.94	3457120.031	DB	20.28	19.85	20.19	-0.42	-0.08
TOPO	530	13956108.32	3457126.314	DB	19.19	18.58	19.79	-0.61	0.60
TOPO	531	13956109.15	3457130.896	DB	19.24	18.71	20.47	-0.52	1.23
TOPO	532	13956109.88	3457136.629	DB	18.65	18.35	20.13	-0.30	1.48
TOPO	533	13956107.53	3457139.925	DB	17.23	17.67	19.84	0.44	2.60
TOPO	534	13956107.26	3457140.839	DB	15.21	14.63	20.04	-0.58	4.83
TOPO	535	13956106.88	3457142.925	DE	14.38	14.63	20.04	0.25	5.66
TOPO	536	13956109.75	3457139.068	WL	16.37	17.67	19.84	1.31	3.47
TOPO	537	13958062.95	3456666.829	SE	25.13	23.96	26.01	-1.17	0.88
TOPO	538	13958064.87	3456677.004	SB	27.37	25.68	25.70	-1.69	-1.66
TOPO	539	13958065.1	3456680.903	RE	27.85	26.26	25.54	-1.59	-2.31
TOPO	540	13958066.33	3456689.533	RC	27.95	26.43	25.49	-1.51	-2.45
TOPO	541	13958071.63	3456697.294	RE	27.88	26.74	25.82	-1.14	-2.06
TOPO	542	13958069.06	3456703.499	SB	27.49	26.35	25.63	-1.13	-1.85
TOPO	543	13958070.91	3456714.244	SE	25.11	24.65	25.82	-0.46	0.71
TOPO	544	13958071.65	3456723.507	SB	25.17	23.66	26.00	-1.51	0.83
TOPO	545	13958074.17	3456750.956	NG	25.72	24.57	26.19	-1.14	0.47
TOPO	546	13958073.09	3456770.17	DT	26.52	25.48	26.21	-1.04	-0.32
TOPO	547	13958075.69	3456788.405	DB	22.14	21.59	26.60	-0.54	4.47
TOPO	548	13958077.44	3456801.107	DB	19.41	19.36	27.74	-0.04	8.34
TOPO	549	13958078.85	3456811.478	DB	18.02	16.70	27.79	-1.31	9.77

TOPO	550	13958082.61	3456827.005	DB	17.40	16.15	27.14	-1.24	9.75
TOPO	551	13958084.85	3456840.345	DB	17.00	15.30	22.68	-1.70	5.69
TOPO	552	13958087.2	3456850.604	DB	17.48	15.85	19.27	-1.64	1.79
TOPO	553	13958087.36	3456852.305	DB	15.26	14.53	18.72	-0.72	3.47
TOPO	554	13958087.45	3456854.241	DE	14.97	14.53	19.08	-0.43	4.11
TOPO	555	13960046.08	3456387.591	SE	25.42	24.85	26.46	-0.57	1.03
TOPO	556	13960046.52	3456395.071	ST	27.53	25.42	26.80	-2.11	-0.73
TOPO	557	13960047.47	3456400.916	RE	27.73	26.36	26.72	-1.37	-1.01
TOPO	558	13960048.35	3456412.428	RC	27.92	26.67	26.51	-1.25	-1.41
TOPO	559	13960049.87	3456422.104	RE	27.65	26.59	26.84	-1.06	-0.81
TOPO	560	13960053.34	3456439.405	GB	27.16	25.82	26.81	-1.34	-0.35
TOPO	561	13960055.21	3456453.452	GB	26.34	25.48	26.81	-0.87	0.47
TOPO	562	13960057.59	3456474.74	GB	27.36	26.21	26.92	-1.15	-0.44
TOPO	563	13960058.87	3456491.364	DT	27.72	26.92	26.94	-0.80	-0.78
TOPO	564	13960060.12	3456502.436	DB	25.19	25.22	26.58	0.03	1.38
TOPO	565	13960061.88	3456521.39	DB	20.75	20.42	28.31	-0.33	7.56
TOPO	566	13960064.06	3456540.326	DB	19.88	18.77	27.87	-1.11	8.00
TOPO	567	13960066.86	3456561.379	DB	19.34	18.37	21.72	-0.97	2.39
TOPO	568	13960067.01	3456563.81	DB	16.87	16.43	20.59	-0.44	3.73
TOPO	569	13960066.39	3456566.035	DE	16.25	16.71	20.68	0.45	4.43
TOPO	570	13960067.07	3456563.828	WL	17.35	16.43	20.59	-0.93	3.24
TOPO	571	13958102.29	3456904.198	SE	28.05	26.99	31.22	-1.06	3.17
TOPO	572	13958100.35	3456892.475	DT	27.09	25.83	29.17	-1.27	2.08
TOPO	573	13958098.78	3456884.395	DB	24.61	23.28	24.61	-1.33	0.00
TOPO	574	13958098.65	3456875.954	DB	21.00	19.86	21.71	-1.14	0.71
TOPO	575	13958097.36	3456870.341	DB	19.55	19.27	21.14	-0.28	1.59
TOPO	576	13958094.7	3456865.098	DB	17.37	15.76	20.23	-1.61	2.86
TOPO	577	13958092.95	3456862.993	DB	16.00	14.58	20.10	-1.42	4.11
TOPO	578	13958094.16	3456858.233	DE	14.23	14.62	19.98	0.39	5.75
TOPO	579	13960038.37	3456627.222	NG	27.70	27.16	28.89	-0.54	1.18
TOPO	580	13960034.78	3456606.547	DT	27.19	26.56	27.45	-0.62	0.27
TOPO	581	13960033.44	3456600.406	DB	24.80	23.26	25.87	-1.54	1.06
TOPO	582	13960031.91	3456592.399	DB	21.50	20.03	22.28	-1.47	0.79
TOPO	583	13960031.17	3456587.522	DB	20.47	19.60	21.10	-0.87	0.64
TOPO	584	13960029.28	3456580.819	DB	19.59	16.91	20.39	-2.68	0.80
TOPO	585	13960028.64	3456579.275	DB	16.32	15.94	20.30	-0.38	3.98
TOPO	586	13956131.82	3457303.189	SE	24.74	23.96	26.02	-0.79	1.27
TOPO	587	13956129.33	3457280.088	NG	26.19	24.91	29.09	-1.28	2.90
TOPO	588	13956127.04	3457251.133	DT	26.09	24.75	26.34	-1.34	0.25
TOPO	589	13956126.74	3457242.507	DB	24.28	22.47	26.24	-1.80	1.96
TOPO	590	13956126.46	3457231.516	DB	22.04	21.00	26.71	-1.04	4.67
TOPO	591	13956125.1	3457219.609	DB	19.07	17.80	31.05	-1.27	11.98
TOPO	592	13956124.85	3457210.745	DB	17.95	16.70	32.31	-1.25	14.36
TOPO	593	13956122.87	3457179.816	DB	17.81	16.60	28.64	-1.21	10.84
TOPO	594	13956116.48	3457149.943	DB	17.29	16.08	20.77	-1.21	3.48
TOPO	595	13956116.14	3457148.475	DB	15.76	14.13	20.46	-1.63	4.70
TOPO	596	13956115.05	3457147.337	DE	14.97	14.13	20.46	-0.84	5.48
TOPO	597	13956115.52	3457149.51	WL	16.27	14.13	20.77	-2.14	4.50
TOPO	5001	13920942.57	3448628.246	NG	20.53	20.05	20.03	-0.48	-0.49
TOPO	5002	13920942.56	3448628.251	NG	20.53	20.05	20.03	-0.48	-0.49
TOPO	5003	13920954.04	3448610.645	SE	20.64	19.84	20.59	-0.80	-0.05
TOPO	5004	13920966.54	3448592.005	SB	21.09	20.89	20.59	-0.20	-0.50
TOPO	5005	13920972.06	3448583.472	SB	21.65	22.50	20.00	0.85	-1.65
TOPO	5006	13920975.5	3448576.406	ST	22.68	23.30	20.40	0.62	-2.28
TOPO	5007	13920981.78	3448566.949	RE ROCK	23.19	23.24	20.60	0.05	-2.60
TOPO	5008	13920993.32	3448550.194	RC ROCK	23.48	19.58	20.44	-3.90	-3.04
TOPO	5009	13921005.57	3448531.72	RE ROCK	23.29	20.37	21.54	-2.92	-1.75
TOPO	5010	13921007.25	3448528.627	DT CONC PAVER	23.21	20.37	21.63	-2.84	-1.59
TOPO	5011	13921011.88	3448518.677	DB CONC PAVER	19.45	18.28	20.52	-1.17	1.07
TOPO	5012	13921019.34	3448506.365	DB CONC PAVER	15.10	14.21	15.20	-0.89	0.10
TOPO	5013	13921025.39	3448497.212	DB CONC PAVER	11.48	8.91	14.93	-2.57	3.46
TOPO	5014	13921031.33	3448487.517	DB CONC PAVER	7.57	6.51	16.15	-1.07	8.58
TOPO	5015	13921033.39	3448483.839	DB CONC PAVER	6.48	4.01	16.14	-2.46	9.66
TOPO	5016	13921034.85	3448480.633	W WATER	4.65	3.67	16.04	-0.97	11.39
TOPO	5017	13921036.36	3448478.699	DE CONC PAVER	2.64	4.02	16.04	1.38	13.40
TOPO	5018	13921037.93	3448475.164	DE CONC PAVER	1.53	3.83	15.03	2.30	13.50
TOPO	5019	13921038.06	3448469.281	DC	0.56	3.89	14.53	3.33	13.97
TOPO	5020	13922231.2	3449869.977	NG	19.89	18.59	19.38	-1.31	-0.52
TOPO	5021	13922278.24	3449831.844	SE	21.00	20.64	21.45	-0.36	0.44
TOPO	5022	13922285.86	3449826.29	SB	21.91	21.34	22.08	-0.57	0.17
TOPO	5023	13922292.27	3449821.32	ST	23.17	21.73	23.15	-1.44	-0.02
TOPO	5024	13922305.02	3449811.328	SB SPILLWAY	23.32	21.52	24.37	-1.80	1.05
TOPO	5025	13922315.73	3449802.194	SB SPILLWAY	22.85	20.86	25.02	-1.98	2.18
TOPO	5026	13922321.09	3449797.489	SB SPILLWAY	21.36	19.58	25.07	-1.77	3.72
TOPO	5027	13922331.51	3449788.351	SB SPILLWAY	20.82	18.91	25.24	-1.92	4.42
TOPO	5028	13922334.88	3449785.828	DT CONC PAVER	20.46	18.47	24.96	-1.98	4.50
TOPO	5029	13922343.62	3449778.367	DB CONC PAVER	16.63	15.24	23.45	-1.38	6.82
TOPO	5030	13922356.83	3449767.247	DB CONC PAVER	10.95	9.10	18.50	-1.84	7.55
TOPO	5031	13922365.25	3449761.001	DB CONC PAVER	7.49	5.27	15.49	-2.22	8.01
TOPO	5032	13922370.66	3449756.257	DB CONC PAVER	4.80	3.80	15.65	-1.00	10.85
TOPO	5033	13922370.69	3449756.266	W WATER	4.79	3.80	15.65	-0.99	10.86
TOPO	5034	13922501.27	3450139.596	NG	18.94	17.16	19.37	-1.79	0.43
TOPO	5035	13922547.6	3450115.801	NG	18.92	17.19	26.56	-1.74	7.64
TOPO	5036	13922575.82	3450095.365	DT	18.51	17.44	24.91	-1.06	6.40
TOPO	5037	13922585.38	3450087.599	DB	15.00	13.91	23.64	-1.10	8.63
TOPO	5038	13922593.74	3450081.385	DB	12.31	10.50	21.03	-1.81	8.72
TOPO	5039	13922608.07	3450069.586	DB	10.85	9.23	16.41	-1.62	5.56
TOPO	5040	13922609.1	3450068.417	DB	9.34	8.93	15.89	-0.41	6.56
TOPO	5041	13922613.48	3450065.264	DB	7.25	5.02	16.15	-2.23	8.90
TOPO	5042	13922614.51	3450064.903	DB	5.58	5.02	16.15	-0.56	10.58
TOPO	5043	13922616.06	3450064.262	W WATER	5.02	5.02	16.31	0.00	11.29
TOPO	5044	13923885.56	3451040.897	NG	20.60	19.06	20.56	-1.54	-0.04
TOPO	5045	13923906.18	3450980.321	NG	20.47	19.40	21.14	-1.07	0.67
TOPO	5046	13923912.42	3450962.502	NG	19.47	17.99	26.05	-1.48	6.59

TOPO	5047	13923920.31	3450936.956	DT	20.01	18.33	29.71	-1.67	9.70
TOPO	5048	13923926.97	3450917.12	DB	16.84	15.03	22.23	-1.81	5.39
TOPO	5049	13923931.67	3450901.558	DB	13.23	11.96	20.09	-1.27	6.86
TOPO	5050	13923934.97	3450890.43	DB	12.07	10.60	15.36	-1.46	3.29
TOPO	5051	13923939.2	3450874.151	DB	10.25	8.40	15.76	-1.86	5.50
TOPO	5052	13923941.17	3450869.956	DB	7.74	7.57	15.76	-0.17	8.01
TOPO	5053	13923942.33	3450867.271	DB	7.08	5.69	15.77	-1.39	8.70
TOPO	5054	13923943.47	3450864.832	DE	5.04	4.42	15.77	-0.62	10.74
TOPO	5055	13923943.35	3450865.51	W WATER	5.65	4.79	15.77	-0.86	10.13
TOPO	5056	13925449.42	3450081.013	NG	21.15	20.05	21.88	-1.10	0.73
TOPO	5057	13925444.21	3450078.354	DT	21.11	19.33	23.08	-1.78	1.97
TOPO	5058	13925436.45	3450072.119	DC	19.34	18.20	26.89	-1.14	7.55
TOPO	5059	13925424.77	3450067.277	DT	20.43	18.86	28.80	-1.57	8.37
TOPO	5060	13925409.67	3450059.84	NG	20.53	19.09	29.86	-1.43	9.33
TOPO	5061	13925392.97	3450048.319	DT	21.17	19.62	24.02	-1.55	2.85
TOPO	5062	13925381.22	3450042.923	DB	17.11	15.88	21.63	-1.23	4.52
TOPO	5063	13925368.93	3450037.763	DB	13.71	11.80	18.01	-1.91	4.30
TOPO	5064	13925356.29	3450030.937	DB	11.17	9.87	14.94	-1.31	3.77
TOPO	5065	13925354.83	3450029.908	DB	9.67	8.82	14.97	-0.85	5.31
TOPO	5066	13925341.53	3450021.451	DB	7.16	4.92	15.22	-2.24	8.05
TOPO	5067	13925339.75	3450019.936	DB	5.48	4.92	15.24	-0.56	9.76
TOPO	5068	13925337.71	3450019.773	DB	4.74	4.52	15.43	-0.22	10.69
TOPO	5069	13925339.62	3450019.41	W WATER	5.99	4.75	15.24	-1.24	9.25
TOPO	5070	13926963.71	3449456.418	NG	22.06	20.12	26.27	-1.93	4.21
TOPO	5071	13926967.09	3449447.779	DT	20.87	18.55	26.90	-2.32	6.04
TOPO	5072	13926970.3	3449440.239	DC	18.42	17.66	28.00	-0.76	9.58
TOPO	5073	13926973.16	3449426.927	DT	21.04	19.61	29.45	-1.42	8.42
TOPO	5074	13926978.62	3449411.297	NG	21.51	19.92	29.85	-1.59	8.34
TOPO	5075	13926981.83	3449402.238	DT	21.33	19.66	29.22	-1.67	7.90
TOPO	5076	13926986.89	3449391.702	DB	17.40	16.00	27.35	-1.39	9.96
TOPO	5077	13926990.97	3449382.173	DB	14.14	12.78	25.06	-1.36	10.92
TOPO	5078	13926995.99	3449370.701	DB	12.59	11.42	17.58	-1.17	4.99
TOPO	5079	13927000.5	3449360.874	DB	11.17	8.37	17.20	-2.80	6.03
TOPO	5080	13927001.15	3449359.458	DB	8.80	8.37	17.20	-0.43	8.41
TOPO	5081	13927003.31	3449354.757	DB	7.49	7.35	17.02	-0.14	9.53
TOPO	5082	13927005.24	3449350.57	DB	7.24	4.56	17.16	-2.68	9.92
TOPO	5083	13927005.65	3449348.566	DB	5.45	4.56	17.29	-0.90	11.84
TOPO	5084	13927005.48	3449348.782	W WATER	6.46	4.56	17.29	-1.90	10.83
TOPO	5085	13928773.14	3450242.917	NG	22.41	21.50	24.83	-0.91	2.42
TOPO	5086	13928797.01	3450218.283	DT	22.12	20.69	22.72	-1.43	0.61
TOPO	5087	13928801.41	3450207.812	DC	20.38	19.49	25.65	-0.89	5.27
TOPO	5088	13928806.78	3450199.061	DT	21.33	20.19	27.00	-1.14	5.67
TOPO	5089	13928812.13	3450185.457	NG	22.10	20.95	28.23	-1.14	6.13
TOPO	5090	13928819.91	3450172.762	DT	22.31	21.00	27.85	-1.31	5.53
TOPO	5091	13928826.67	3450161.623	DB	19.47	17.88	26.66	-1.59	7.19
TOPO	5092	13928834.29	3450149.693	DB	16.44	15.34	26.96	-1.10	10.52
TOPO	5093	13928841.92	3450138.298	DB	12.93	11.45	20.05	-1.48	7.12
TOPO	5094	13928849.36	3450125.707	DB	10.19	9.33	16.65	-0.86	6.46
TOPO	5095	13928853.12	3450119.521	DB	8.95	7.83	16.78	-1.11	7.83
TOPO	5096	13928853.68	3450118.756	DB	7.32	6.28	16.78	-1.04	9.45
TOPO	5097	13928855.15	3450116.249	DB	6.09	5.78	16.66	-0.31	10.57
TOPO	5098	13928856.2	3450114.575	DB	5.26	5.42	17.02	0.16	11.76
TOPO	5099	13928855.32	3450116.759	W WATER	6.60	5.78	16.78	-0.82	10.18
TOPO	5100	13930443.55	3451255.608	DT	22.21	20.97	27.05	-1.24	4.85
TOPO	5101	13930449.37	3451249.572	DC	20.77	20.20	27.82	-0.57	7.06
TOPO	5102	13930454.55	3451244.227	DT	21.48	20.76	27.96	-0.73	6.48
TOPO	5103	13930467.48	3451230.277	NG	22.21	21.11	30.87	-1.10	8.66
TOPO	5104	13930482.93	3451217.144	DT	22.30	21.25	28.41	-1.05	6.11
TOPO	5105	13930482.7	3451217.155	DT	22.11	21.25	28.41	-0.86	6.30
TOPO	5106	13930487.72	3451212.009	DB	20.31	18.78	27.59	-1.54	7.27
TOPO	5107	13930493.65	3451206.668	DB	18.72	17.19	27.35	-1.53	8.64
TOPO	5108	13930497.64	3451201.049	DB	16.84	15.25	25.63	-1.59	8.80
TOPO	5109	13930505.95	3451195.459	DB	14.22	12.32	23.80	-1.90	9.58
TOPO	5110	13930516.73	3451184.557	DB	10.11	8.79	18.69	-1.31	8.59
TOPO	5111	13930520.02	3451181.598	DB	9.10	8.12	21.74	-0.98	12.64
TOPO	5112	13930521.96	3451180.141	DB	9.11	7.44	22.96	-1.66	13.85
TOPO	5113	13930525.12	3451177.244	DB	5.73	5.34	22.95	-0.39	17.22
TOPO	5114	13931827.13	3452678.33	NG	22.39	22.51	23.61	0.12	1.22
TOPO	5115	13931827.15	3452678.419	NG	22.46	22.51	23.61	0.04	1.15
TOPO	5116	13931832.57	3452673.182	DT	21.78	21.34	23.66	-0.44	1.88
TOPO	5117	13931837.45	3452669.205	DB	20.86	20.13	22.40	-0.73	1.54
TOPO	5118	13931843.99	3452665.126	DC	17.36	17.98	25.82	0.63	8.46
TOPO	5119	13931851.52	3452659.337	DT	20.25	19.20	28.37	-1.04	8.12
TOPO	5120	13931861.96	3452653.889	NG	21.16	20.02	32.01	-1.14	10.85
TOPO	5121	13931878.18	3452641.732	DT	21.79	20.87	24.55	-0.92	2.76
TOPO	5122	13931882.4	3452638.948	DB	21.19	19.82	23.20	-1.37	2.02
TOPO	5123	13931887.95	3452631.841	DB	18.88	17.70	24.89	-1.18	6.01
TOPO	5124	13931900.99	3452619.046	DB	13.98	13.34	22.83	-0.64	8.85
TOPO	5125	13931909.41	3452610.119	DB	11.02	10.34	22.44	-0.68	11.42
TOPO	5126	13931912.37	3452606.463	DB	9.97	9.34	22.61	-0.63	12.65
TOPO	5127	13931914.12	3452605.281	DB	8.81	7.54	22.51	-1.27	13.70
TOPO	5128	13931918.74	3452601.374	DB	8.08	6.54	22.41	-1.54	14.33
TOPO	5129	13931919.55	3452600.463	DB	6.44	6.54	22.41	0.10	15.97
TOPO	5130	13931918.98	3452600.449	W WATER	6.99	6.54	22.41	-0.45	15.42
TOPO	5131	13933211.83	3454130.2	NG	22.28	23.52	23.79	1.24	1.51
TOPO	5132	13933220.72	3454123.836	DT	21.94	21.44	24.44	-0.49	2.50
TOPO	5133	13933228.28	3454116.884	DC	20.64	20.40	26.13	-0.24	5.49
TOPO	5134	13933233.85	3454111.573	DT	21.38	20.68	27.65	-0.70	6.27
TOPO	5135	13933240.1	3454106.434	NG	21.74	21.22	28.44	-0.52	6.70
TOPO	5136	13933261.33	3454086.915	DT	22.06	20.78	28.00	-1.29	5.93
TOPO	5137	13933267.72	3454081.741	DB	19.78	19.37	27.13	-0.41	7.35
TOPO	5138	13933273.05	3454076.277	DB	19.05	18.43	27.09	-0.62	8.04
TOPO	5139	13933286.02	3454066.161	DB	14.54	14.12	22.11	-0.42	7.57
TOPO	5140	13933292.37	3454060.759	DB	13.68	12.59	19.51	-1.10	5.83

TOPO	5141	13933296.03	3454057.728	DB	12.26	11.36	18.50	-0.90	6.24
TOPO	5142	13933302.86	3454052.206	DB	11.17	9.17	18.35	-2.00	7.18
TOPO	5143	13933305.42	3454050.007	DB	10.09	7.61	18.02	-2.47	7.94
TOPO	5144	13933307.23	3454049.436	DB	6.83	7.91	18.02	1.08	11.19
TOPO	5145	13933306.75	3454049.389	W WATER	7.28	7.91	18.02	0.63	10.75
TOPO	5146	13934744.3	3455452.264	NG	24.34	23.89	27.70	-0.46	3.36
TOPO	5147	13934749.78	3455440.096	NG	25.09	24.47	28.45	-0.63	3.36
TOPO	5148	13934756.33	3455425.908	DT	25.18	24.77	29.76	-0.41	4.58
TOPO	5149	13934756.71	3455419.723	DB	24.37	24.12	31.30	-0.25	6.93
TOPO	5150	13934762.25	3455407.18	DB	21.18	20.82	32.58	-0.36	11.40
TOPO	5151	13934767.02	3455389.554	DB	15.96	14.85	28.57	-1.11	12.61
TOPO	5152	13934771.32	3455376.21	DB	11.52	11.11	24.06	-0.41	12.54
TOPO	5153	13934775.53	3455361.053	DB	10.01	9.71	18.01	-0.30	8.01
TOPO	5154	13934779.95	3455347.822	DB	9.73	9.00	17.85	-0.73	8.12
TOPO	5155	13934780.7	3455346.848	DB	7.44	6.68	17.85	-0.76	10.41
TOPO	5156	13934780.44	3455346.877	W WATER	7.60	6.68	17.85	-0.92	10.25
TOPO	5157	13936697.14	3456061.034	DC	20.85	20.57	23.12	-0.28	2.27
TOPO	5158	13936697.93	3456049.453	DT	22.04	21.19	23.01	-0.84	0.97
TOPO	5159	13936697.88	3456036.88	NG	22.65	22.14	23.05	-0.51	0.40
TOPO	5160	13936696.56	3456014.211	DT	23.43	22.67	28.64	-0.76	5.21
TOPO	5161	13936693.92	3456006.543	DB	21.02	21.07	28.95	0.05	7.94
TOPO	5162	13936693.94	3456000.296	DB	18.60	18.58	28.85	-0.02	10.24
TOPO	5163	13936693.06	3455987.363	DB	14.14	14.20	28.48	0.07	14.35
TOPO	5164	13936693.6	3455980.723	DB	12.56	11.43	28.02	-1.13	15.46
TOPO	5165	13936693.26	3455957.307	DB	10.81	10.15	26.18	-0.66	15.37
TOPO	5166	13936693.28	3455929.198	DB	10.13	9.48	21.59	-0.65	11.46
TOPO	5167	13936693.19	3455912.152	DB	10.19	9.18	18.21	-1.01	8.03
TOPO	5168	13936693.38	3455903.258	DB	10.68	9.45	18.19	-1.24	7.51
TOPO	5169	13936693.28	3455901.743	DB	7.92	8.94	18.18	1.02	10.26
TOPO	5170	13936693.11	3455902.105	W WATER	8.18	8.86	18.18	0.68	10.00
TOPO	5171	13938684.07	3456093.559	NG	23.79	22.73	25.51	-1.06	1.72
TOPO	5172	13938690	3456041.849	DT	23.69	22.57	26.05	-1.12	2.36
TOPO	5173	13938689.02	3456033.043	DB	22.17	21.09	26.58	-1.08	4.41
TOPO	5174	13938686.31	3456012.028	DB	17.06	16.57	27.92	-0.49	10.86
TOPO	5175	13938684.92	3455995.728	DB	12.68	11.95	29.36	-0.73	16.67
TOPO	5176	13938682.8	3455980.141	DB	11.30	10.30	28.36	-1.00	17.06
TOPO	5177	13938681.55	3455953.426	DB	10.35	9.21	19.68	-1.14	9.33
TOPO	5178	13938683.7	3455929.866	DB	10.80	9.70	18.07	-1.10	7.27
TOPO	5179	13938683.81	3455927.255	DB	10.59	9.77	18.07	-0.82	7.48
TOPO	5180	13938683.74	3455924.584	DB	8.48	7.10	18.16	-1.38	9.68
TOPO	5181	13938684.15	3455924.053	W WATER	8.57	7.10	18.36	-1.47	9.79
TOPO	5182	13940691.71	3456106.379	DC	24.14	22.90	24.12	-1.24	-0.02
TOPO	5183	13940691.92	3456097.47	DT	24.52	23.21	24.36	-1.31	-0.16
TOPO	5184	13940692.36	3456089.941	NG	24.84	23.56	24.12	-1.29	-0.73
TOPO	5185	13940693.49	3456064.015	DT	24.88	22.81	24.47	-2.07	-0.41
TOPO	5186	13940693.01	3456056.572	DB	22.66	21.63	25.40	-1.04	2.74
TOPO	5187	13940693.14	3456037.974	DB	17.56	16.74	28.31	-0.83	10.75
TOPO	5188	13940692.98	3456037.809	DB	17.53	16.74	28.41	-0.79	10.88
TOPO	5189	13940693.4	3456032.866	DB	16.91	15.18	29.05	-1.72	12.14
TOPO	5190	13940693.35	3456026.112	DB	14.50	14.36	29.49	-0.14	14.99
TOPO	5191	13940694	3456020.913	DB	13.50	12.57	29.54	-0.92	16.04
TOPO	5192	13940694.81	3456004.524	DB	11.67	10.14	28.96	-1.53	17.29
TOPO	5193	13940693.95	3455983.802	DB	11.36	10.06	23.50	-1.29	12.15
TOPO	5194	13940693.88	3455959.822	DB	11.38	10.16	18.09	-1.22	6.71
TOPO	5195	13940693.37	3455952.661	DB	12.01	8.82	18.29	-3.19	6.28
TOPO	5196	13940693.36	3455950.673	DB	9.14	8.82	18.29	-0.32	9.15
TOPO	5197	13940693.5	3455950.56	W WATER	9.30	8.82	18.29	-0.48	8.99
TOPO	5198	13933321.14	3454038.396	DB	5.57	7.90	18.05	2.33	12.48
TOPO	5199	13933320.39	3454039.86	DE	4.97	6.10	18.09	1.13	13.13
TOPO	5200	13933316.42	3454043.728	DC	5.28	5.99	18.06	0.72	12.78
TOPO	5201	13933312.66	3454049.161	DE	5.88	6.34	18.19	0.46	12.31
TOPO	5202	13933309.96	3454051.257	DB	6.51	6.34	18.51	-0.17	12.00
TOPO	5203	13931930.6	3452589.858	DB	5.97	7.29	21.22	1.32	15.25
TOPO	5204	13931929.29	3452590.565	DE	5.51	6.05	21.64	0.54	16.13
TOPO	5205	13931926.47	3452592.284	DB	5.28	5.41	21.96	0.13	16.68
TOPO	5206	13931925.02	3452593.764	DC	4.50	5.29	22.06	0.80	17.56
TOPO	5207	13931923.18	3452595.221	DC	4.39	5.56	22.06	1.17	17.67
TOPO	5208	13931922.61	3452596.454	DB	5.27	5.51	22.42	0.23	17.15
TOPO	5209	13931920.45	3452597.676	DE	5.69	6.14	22.30	0.45	16.61
TOPO	5210	13931919.55	3452598.907	DB	6.09	6.14	22.52	0.05	16.44
TOPO	5211	13930534.67	3451166.704	DB	5.25	5.59	20.74	0.34	15.49
TOPO	5212	13930532.76	3451168.407	DE	4.79	5.59	21.95	0.81	17.17
TOPO	5213	13930529.72	3451171.611	DC	4.81	5.40	22.46	0.59	17.66
TOPO	5214	13930526.79	3451174.615	DE	4.85	5.34	23.17	0.49	18.31
TOPO	5215	13930524.98	3451176.577	DB	5.59	5.57	22.95	-0.02	17.36
TOPO	5216	13928858.91	3450102.73	DE	4.22	5.91	17.03	1.69	12.81
TOPO	5217	13928857.65	3450107.529	DC	4.15	5.51	17.26	1.36	13.11
TOPO	5218	13928854.98	3450110.282	DE	4.36	5.46	16.90	1.09	12.54
TOPO	5219	13928854.64	3450113.844	DB	5.17	5.42	16.66	0.25	11.49
TOPO	5220	13927012.27	3449337.035	DB	4.70	4.91	16.75	0.22	12.06
TOPO	5221	13927010.67	3449338.399	DB	4.82	4.91	16.75	0.10	11.93
TOPO	5222	13927010.05	3449339.816	DE	4.03	4.73	16.66	0.71	12.63
TOPO	5223	13927009.18	3449342.848	DC	3.53	4.73	16.79	1.21	13.26
TOPO	5224	13927007.28	3449344.823	DE	3.63	4.73	17.10	1.10	13.47
TOPO	5225	13927006.85	3449345.931	DB	4.46	4.65	16.97	0.19	12.52
TOPO	5226	13927006.93	3449347.468	DB	4.95	4.65	16.97	-0.30	12.02
TOPO	5227	13925323.18	3450012.101	DB	5.15	4.82	15.87	-0.33	10.72
TOPO	5228	13925324.56	3450013.474	DE	4.47	4.82	15.68	0.35	11.21
TOPO	5229	13925331.09	3450015.539	DC	4.37	4.68	15.65	0.30	11.28
TOPO	5230	13925336.13	3450017.912	DE	4.30	4.52	15.43	0.23	11.14
TOPO	5231	13925338.36	3450018.999	DB	4.92	4.52	15.24	-0.39	10.33
TOPO	5232	13923944.95	3450863.02	DB	4.48	4.42	15.77	-0.05	11.30
TOPO	5233	13923945.49	3450862.703	DE	4.46	4.42	15.77	-0.04	11.31
TOPO	5234	13923948.58	3450857.605	DC	3.66	4.23	15.79	0.57	12.14

TOPO	5235	13923949.68	3450850.891	DE	4.07	4.28	15.83	0.22	11.77
TOPO	5236	13922618.72	3450062.688	DE	4.41	4.18	16.36	-0.23	11.95
TOPO	5237	13922625.95	3450056.473	DC	3.94	4.69	16.90	0.75	12.96
TOPO	5238	13922629.25	3450054.158	DE	4.23	4.86	16.77	0.63	12.54
TOPO	5239	13922631.59	3450052.185	DB	4.94	4.82	16.99	-0.12	12.05
TOPO	5240	13922374.65	3449755.321	DB	3.48	3.91	15.60	0.43	12.12
TOPO	5241	13922378.82	3449751.773	DE	1.13	3.88	16.09	2.75	14.97
TOPO	5242	13922392.68	3449737.977	DB	3.33	3.91	17.31	0.58	13.98
TOPO	5243	13922388.46	3449742.839	DE	1.10	4.01	16.81	2.91	15.71
TOPO	5244	13921041.41	3448459.286	DB	4.61	5.03	14.32	0.42	9.71
TOPO	5245	13921041.15	3448460.437	DB	3.91	4.39	14.41	0.48	10.50
TOPO	5246	13921039.6	3448464.017	DB	3.18	4.25	14.45	1.06	11.27
TOPO	5247	13921037.55	3448465.677	DE	1.26	4.04	14.45	2.78	13.19
TOPO	5248	13921226.24	3448974.193	C 24" HDPE	16.19	17.66	18.09	1.48	1.91
TOPO	5249	13921259	3448949.008	C 24" HDPE	9.40	18.03	19.90	8.63	10.50
TOPO	5250	13921254.76	3448720.003	DT CONC SPILLWAY START	25.00	23.42	29.12	-1.59	4.11
TOPO	5251	13921286.68	3448744.264	DE CONC SPILLWAY START	23.28	21.60	27.19	-1.68	3.91
TOPO	5252	13921501.97	3448907.447	DE CONC SPILLWAY PI	23.22	21.50	27.98	-1.72	4.76
TOPO	5253	13921552.01	3448949.869	DE CONC SPILLWAY PI	23.28	21.58	26.81	-1.71	3.53
TOPO	5254	13922325.22	3449834.098	DE CONC SPILLWAY END	23.26	21.62	27.10	-1.63	3.84
TOPO	5255	13922349.85	3449862.316	DT CONC SPILLWAY END	25.02	23.28	27.40	-1.74	2.38
TOPO	5256	13922440	3449886.909	DT CONC SPILLWAY START	24.95	23.19	20.10	-1.75	-4.84
TOPO	5257	13922456.79	3449871.117	DE CONC SPILLWAY START	22.86	21.37	16.52	-1.49	-6.33
TOPO	5258	13922488.32	3449846.544	DE CONC SPILLWAY END	22.89	21.25	14.99	-1.64	-7.90
TOPO	5259	13922507.81	3449834.267	DT CONC SPILLWAY END	24.96	23.57	18.18	-1.39	-6.78
TOPO	5260	13922447.39	3449807.821	C FL 9X9 CENTER	11.36	9.39	15.56	-1.97	4.20
TOPO	5261	13922429.46	3449821.612	C FL 9X9 CENTER	11.33	10.33	15.38	-1.00	4.05
TOPO	5262	13922485.53	3449893.614	C FL 9X9 CENTER	11.40	10.25	16.97	-1.15	5.58
TOPO	5263	13922503.61	3449880.357	C FL 9X9 CENTER	11.49	9.34	15.78	-2.15	4.29
TOPO	5264	13922495.01	3449886.758	DB CONC	11.43	10.03	16.41	-1.40	4.98
TOPO	5265	13922487.57	3449877.241	DB CONC	15.37	13.69	16.30	-1.68	0.93
TOPO	5266	13922479.93	3449867.727	DB CONC	19.28	16.77	15.56	-2.51	-3.72
TOPO	5267	13922472.7	3449858.705	DB CONC	22.90	20.57	15.24	-2.33	-7.66
TOPO	5268	13922459.29	3449841.577	DT CONC	22.33	20.17	14.76	-2.16	-7.57
TOPO	5269	13922453.29	3449833.962	DB CONC	19.40	18.04	14.50	-1.36	-4.90
TOPO	5270	13922445.9	3449824.614	DB CONC	15.44	14.30	15.07	-1.14	-0.37
TOPO	5271	13922438.53	3449815.053	DB CONC	11.43	10.51	15.40	-0.92	3.98
TOPO	5272	13922430.59	3449804.942	DB CONC	8.56	6.74	16.58	-1.82	8.02
TOPO	5273	13922426.89	3449800.432	DB CONC	8.51	4.97	16.97	-3.53	8.47
TOPO	5274	13922426.85	3449800.407	C FL 72" CMP	1.93	4.97	16.97	3.04	15.04
TOPO	5275	13920910.03	3448436.764	BRG RE 1.42 THICK	25.13	20.28	23.98	-4.85	-1.15
TOPO	5276	13920911.21	3448439.183	BRG PILING CAP	24.57	19.25	24.64	-5.33	0.06
TOPO	5277	13920912.37	3448437.257	BRG PILING CAP	24.53	19.25	23.98	-5.28	-0.55
TOPO	5278	13920924.05	3448417.794	BRG PILING CAP	23.98	9.14	15.99	-14.84	-7.99
TOPO	5279	13920925.22	3448415.827	BRG PILING CAP	24.02	7.81	15.89	-16.21	-8.12
TOPO	5280	13920944.8	3448383.668	BRG PILING CAP	24.01	9.16	14.66	-14.85	-9.35
TOPO	5281	13920946.02	3448381.636	BRG PILING CAP	24.06	10.65	14.78	-13.41	-9.28
TOPO	5282	13920957.77	3448362.271	BRG PILING CAP	23.95	19.34	23.01	-4.60	-0.94
TOPO	5283	13920958.99	3448360.321	BRG PILING CAP	23.98	19.34	24.21	-4.64	0.23
TOPO	5284	13920956.34	3448360.399	BRG RE 1.42 THICK	24.85	19.34	23.87	-5.51	-0.98
TOPO	5285	13920921.9	3448339.766	BRG RE 1.42 THICK	24.88	22.00	19.57	-2.88	-5.31
TOPO	5286	13920920.78	3448337.304	BRG PILING CAP	23.98	21.91	20.89	-2.07	-3.09
TOPO	5287	13920919.66	3448339.325	BRG PILING CAP	23.99	21.40	18.16	-2.59	-5.83
TOPO	5288	13920908.02	3448358.64	BRG PILING CAP	24.01	12.03	14.63	-11.98	-9.38
TOPO	5289	13920906.84	3448360.626	BRG PILING CAP	24.00	10.22	14.99	-13.78	-9.02
TOPO	5290	13920887.4	3448392.8	BRG PILING CAP	23.93	6.90	14.17	-17.03	-9.76
TOPO	5291	13920886.23	3448394.798	BRG PILING CAP	23.97	8.58	14.46	-15.40	-9.51
TOPO	5292	13920874.52	3448414.243	BRG PILING CAP	23.92	19.46	21.62	-4.46	-2.30
TOPO	5293	13920873.31	3448416.163	BRG PILING CAP	23.94	20.02	21.62	-3.92	-2.32
TOPO	5294	13920876.04	3448416.114	BRG RE 1.42 THICK	25.03	19.46	21.24	-5.57	-3.79
TOPO	5295	13920856.88	3448422.429	DT ROCK	23.71	22.81	19.52	-0.90	-4.19
TOPO	5296	13920862.19	3448413.652	DB ROCK	21.02	20.74	20.98	-0.27	-0.04
TOPO	5297	13920866.26	3448406.866	DB ROCK	18.30	17.29	19.65	-1.01	1.35
TOPO	5298	13920870.07	3448397.71	DB ROCK	14.28	11.72	15.01	-2.56	0.72
TOPO	5299	13920875.39	3448387.929	DB ROCK	9.56	7.79	14.54	-1.77	4.98
TOPO	5300	13920878.93	3448381.719	DB ROCK	6.35	4.85	14.34	-1.50	8.00
TOPO	5301	13920880.13	3448378.906	DB ROCK	5.58	3.82	14.28	-1.76	8.70
TOPO	5302	13920881.39	3448375.934	DB ROCK	5.69	3.62	14.50	-2.07	8.81
TOPO	5303	13920882.35	3448374.95	DE ROCK	4.30	3.62	14.20	-0.68	9.91
TOPO	5304	13920916.15	3448321.154	DT ROCK	22.96	21.83	17.63	-1.13	-5.33
TOPO	5305	13920911.46	3448326.726	DB ROCK	21.62	20.51	18.04	-1.11	-3.58
TOPO	5306	13920906.03	3448334.461	DB ROCK	18.43	18.06	15.51	-0.37	-2.92
TOPO	5307	13920900.61	3448343.35	DB ROCK	14.60	11.56	14.21	-3.03	-0.38
TOPO	5308	13920893.83	3448352.431	DB ROCK	9.84	9.05	14.83	-0.79	4.99
TOPO	5309	13920891.15	3448358.611	DB ROCK	6.27	4.89	14.56	-1.38	8.28
TOPO	5310	13920889.91	3448360.699	DB ROCK	5.08	3.64	14.54	-1.44	9.46
TOPO	5311	13920888.31	3448362.362	DB ROCK	4.39	3.64	14.41	-0.75	10.02
TOPO	5312	13920887.82	3448363.035	DE ROCK	3.12	3.64	14.41	0.52	11.29
TOPO	5313	13960255.46	3456370.955	RE ASPHALT	28.37	26.58	25.67	-1.79	-2.70
TOPO	5314	13960258.15	3456383.536	RC ASPHALT	28.85	27.56	25.92	-1.29	-2.92
TOPO	5315	13960259.73	3456394	RE ASPHALT	28.41	27.47	25.86	-0.94	-2.55
TOPO	5316	13960260.58	3456400.763	DT	27.83	26.90	25.82	-0.92	-2.01
TOPO	5317	13960262.23	3456412.016	DE	26.27	25.63	26.03	-0.64	-0.24
TOPO	5318	13960261.74	3456416.397	DE	26.05	25.02	25.94	-1.04	-0.11
TOPO	5319	13960263.09	3456423.303	DT	26.43	25.32	26.29	-1.12	-0.15
TOPO	5320	13960268.31	3456451.448	NG	26.57	25.82	25.74	-0.75	-0.84
TOPO	5321	13960271	3456475.088	NG	27.95	26.97	26.55	-0.98	-1.40
TOPO	5322	13960272.29	3456488.724	DT	28.04	27.15	27.83	-0.89	-0.21
TOPO	5323	13960272.81	3456494.86	DB	25.99	26.18	28.10	0.19	2.11
TOPO	5324	13960273.71	3456500.252	DB	23.92	22.86	27.83	-1.06	3.91
TOPO	5325	13960274.19	3456506.41	DB	21.84	20.49	27.36	-1.35	5.52
TOPO	5326	13960277.05	3456514.521	DB	20.33	19.32	25.83	-1.01	5.50
TOPO	5327	13960279.97	3456530.26	DB	19.31	18.36	20.89	-0.96	1.58
TOPO	5328	13960280.13	3456537.59	DB	18.98	17.56	20.43	-1.42	1.45

TOPO	5329	13960280.43	3456539.672	DB	16.95	17.53	20.43	0.58	3.48
TOPO	5330	13960280.52	3456540.841	DE	16.19	16.72	20.39	0.53	4.21
TOPO	5331	13960305.58	3456520.726	C 36" RCP	17.84	22.99	22.53	5.15	4.69
TOPO	5332	13960310.29	3456526.519	C 10X7 BOX FL/CL	17.17	24.91	21.13	7.74	3.96
TOPO	5333	13960312.25	3456536.627	C 10X7 BOX FL/CL	16.99	25.45	21.20	8.46	4.22
TOPO	5334	13960314.24	3456546.767	C 10X7 BOX FL/CL	17.13	17.65	21.60	0.52	4.48
TOPO	5335	13960316.2	3456557.254	C 10X7 BOX FL/CL	17.05	22.47	23.61	5.42	6.56
TOPO	5336	13960312.54	3456565.848	C 18" RCP	19.17	17.95	22.99	-1.22	3.82
TOPO	5337	13960284.81	3456545.651	DE	16.09	16.10	20.27	0.01	4.18
TOPO	5338	13960285.08	3456547.166	DB	18.57	16.10	20.16	-2.47	1.59
TOPO	5339	13960285.88	3456550.077	DB	18.99	16.73	20.07	-2.27	1.08
TOPO	5340	13960286.9	3456560.711	DB	19.11	18.27	20.52	-0.84	1.42
TOPO	5341	13960287.45	3456563.263	DB	20.01	18.85	20.52	-1.17	0.51
TOPO	5342	13960288.46	3456570.934	DB	21.65	20.80	21.88	-0.85	0.22
TOPO	5343	13960288.36	3456577.83	DB	25.31	24.21	25.04	-1.10	-0.27
TOPO	5344	13960289.49	3456583.625	DT	26.78	25.04	27.67	-1.74	0.89
TOPO	5345	13960290.41	3456588.086	RE CONC	26.97	25.83	27.60	-1.13	0.63
TOPO	5346	13960292.69	3456599.608	RE CONC	27.11	25.82	27.55	-1.30	0.43
TOPO	5347	13960489.78	3456523.561	C 10X7 BOX FL/CL	17.20	17.60	22.54	0.40	5.34
TOPO	5348	13960488.14	3456512.81	C 10X7 BOX FL/CL	17.25	17.87	21.08	0.62	3.83
TOPO	5349	13960485.79	3456502.664	C 10X7 BOX FL/CL	17.22	18.39	21.46	1.17	4.24
TOPO	5350	13960484.04	3456492.425	C 10X7 BOX FL/CL	16.94	18.58	21.41	1.64	4.47
TOPO	5351	13941156.95	3456076.966	BRG RE 1.85 THICK	26.21	21.16	25.79	-5.04	-0.41
TOPO	5352	13941127.08	3456076.983	BRG RE 1.85 THICK	26.15	21.68	26.07	-4.47	-0.08
TOPO	5353	13941126.95	3456017.125	BRG RE 1.65 THICK	25.96	10.09	25.74	-15.88	-0.22
TOPO	5354	13941157.26	3456016.845	BRG RE 1.65 THICK	25.96	10.19	25.68	-15.77	-0.28
TOPO	5355	13941157.12	3455957.074	BRG RE 1.65 THICK	25.96	9.35	21.48	-16.60	-4.47
TOPO	5356	13941126.96	3455957.153	BRG RE 1.65 THICK	25.99	8.76	22.56	-17.24	-3.43
TOPO	5357	13941127.12	3455897.336	BRG RE 1.85 THICK	26.21	21.51	25.69	-4.69	-0.52
TOPO	5358	13941156.89	3455897.288	BRG RE 1.85 THICK	26.18	20.77	25.58	-5.42	-0.60
TOPO	5359	13941158.27	3455898.532	BRG CAP PILING	24.60	20.77	25.31	-3.83	0.70
TOPO	5360	13941158.37	3455895.87	BRG CAP PILING	24.59	22.36	25.31	-2.23	0.72
TOPO	5361	13941125.78	3455895.941	BRG CAP PILING	24.59	23.18	25.93	-1.41	1.34
TOPO	5362	13941125.79	3455898.478	BRG CAP PILING	24.59	21.51	25.69	-3.07	1.10
TOPO	5363	13941125.75	3455955.776	BRG CAP PILING	24.67	8.31	22.89	-16.36	-1.78
TOPO	5364	13941125.8	3455958.474	BRG CAP PILING	24.67	8.76	22.56	-15.91	-2.10
TOPO	5365	13941158.27	3455958.606	BRG CAP PILING	24.63	9.35	19.26	-15.28	-5.38
TOPO	5366	13941158.27	3455955.922	BRG CAP PILING	24.63	9.14	21.08	-15.49	-3.55
TOPO	5367	13941158.31	3456015.723	BRG CAP PILING	24.63	10.19	25.82	-14.44	1.19
TOPO	5368	13941158.33	3456018.365	BRG CAP PILING	24.67	10.46	26.02	-14.21	1.35
TOPO	5369	13941125.79	3456015.747	BRG CAP PILING	24.68	10.09	25.74	-14.60	1.06
TOPO	5370	13941125.88	3456018.412	BRG CAP PILING	24.66	10.12	25.69	-14.54	1.03
TOPO	5371	13941125.78	3456075.84	BRG CAP PILING	24.64	21.68	26.07	-2.96	1.43
TOPO	5372	13941125.96	3456078.442	BRG CAP PILING	24.63	23.14	26.08	-1.49	1.44
TOPO	5373	13941158.27	3456078.385	BRG CAP PILING	24.67	22.28	25.88	-2.39	1.21
TOPO	5374	13941158.34	3456075.742	BRG CAP PILING	24.68	21.16	25.89	-3.52	1.20
TOPO	5375	13941174.21	3456131.447	NG	25.98	24.89	25.97	-1.09	-0.01
TOPO	5376	13941171.59	3456087.366	DT	27.12	25.87	26.51	-1.25	-0.61
TOPO	5377	13941171.67	3456083.329	DB	26.11	25.04	26.57	-1.07	0.47
TOPO	5378	13941171.65	3456072.215	DB	22.94	22.22	26.52	-0.73	3.58
TOPO	5379	13941171.88	3456062.425	DB	20.65	19.84	26.25	-0.81	5.60
TOPO	5380	13941172.19	3456051.78	DB	18.33	16.96	25.92	-1.36	7.59
TOPO	5381	13941172.72	3456040.62	DB	15.71	15.46	26.17	-0.26	10.45
TOPO	5382	13941172.98	3456028.026	DB	13.03	12.23	26.12	-0.80	13.09
TOPO	5383	13941173.94	3456014.097	DB	12.06	10.63	25.88	-1.43	13.82
TOPO	5384	13941172.74	3455997.482	DB	11.53	10.24	24.87	-1.29	13.33
TOPO	5385	13941172.51	3455971.479	DB	11.51	9.90	19.01	-1.61	7.50
TOPO	5386	13941172.68	3455953.106	DB	11.84	10.05	19.04	-1.78	7.21
TOPO	5387	13941172.85	3455951.579	DB	9.92	10.12	18.81	0.20	8.89
TOPO	5388	13941172.77	3455950.435	DE	9.65	9.94	18.81	0.29	9.16
TOPO	5389	13941170.45	3455945.4	DC	8.78	8.71	18.75	-0.07	9.97
TOPO	5390	13941170.77	3455938.214	DE	9.00	8.62	19.66	-0.38	10.66
TOPO	5391	13941170.85	3455936.546	DB	9.69	8.62	20.12	-1.07	10.43
TOPO	5392	13941171.72	3455934.473	DB	11.59	8.62	20.12	-2.97	8.53
TOPO	5393	13941171.86	3455928.522	DB	12.55	10.02	21.07	-2.53	8.52
TOPO	5394	13941172.2	3455922.881	DB	13.13	11.32	20.12	-1.81	6.99
TOPO	5395	13941172.37	3455918.186	DB	15.41	15.34	18.16	-0.07	2.75
TOPO	5396	13941173.19	3455905.705	DB	19.57	18.45	21.27	-1.11	1.70
TOPO	5397	13941173.61	3455896.838	DB	23.37	22.04	24.64	-1.33	1.27
TOPO	5398	13941173.62	3455889.807	DT	25.48	24.09	25.48	-1.38	0.01
TOPO	5399	13941179.84	3455853.011	RE ASPHALT	26.43	25.35	24.36	-1.08	-2.07
TOPO	5400	13941182.4	3455837.561	RC ASPHALT	26.24	24.92	21.18	-1.33	-5.06
TOPO	5401	13941184.25	3455824.397	RE ASPHALT	26.25	25.04	21.27	-1.21	-4.98
TOPO	5402	13941198.64	3455769.751	NG	23.25	21.72	22.56	-1.53	-0.70
TOPO	5403	13922506.68	3449902.243	C 72" CMP	1.70	4.61	18.51	2.91	16.80
TOPO	5404	13922505.73	3449900.455	DB CONC	8.41	6.71	18.18	-1.70	9.78
TOPO	5405	13922502.2	3449896.109	DB CONC	8.52	7.44	17.72	-1.08	9.20
ROAD	5406	13959972.63	3456424.9	RC	27.87	26.82	26.27	-1.05	-1.60
ROAD	5407	13960073.96	3456409.375	RC	27.84	26.71	27.06	-1.13	-0.78
ROAD	5408	13959995.55	3454709.339	RC	30.09	28.97	30.00	-1.12	-0.09
ROAD	**5409**	**13960015.88**	**3454812.915**	**RC**	**29.79**	**28.74**	**29.56**	**-1.04**	**-0.23**
ROAD	**5410**	**13960036.02**	**3454912.784**	**RC**	**29.64**	**28.61**	**29.62**	**-1.04**	**-0.02**
ROAD	**5411**	**13960055.66**	**3455011.723**	**RC**	**29.55**	**28.39**	**29.24**	**-1.16**	**-0.31**
ROAD	**5412**	**13960075.65**	**3455111.94**	**RC**	**29.55**	**28.37**	**29.18**	**-1.18**	**-0.37**
ROAD	**5413**	**13960095.3**	**3455212.424**	**RC**	**29.63**	**28.53**	**29.42**	**-1.10**	**-0.21**
ROAD	**5414**	**13960114.76**	**3455312.099**	**RC**	**29.62**	**28.51**	**29.68**	**-1.10**	**0.06**
ROAD	**5415**	**13960135**	**3455412.708**	**RC**	**29.70**	**28.77**	**29.58**	**-0.93**	**-0.11**
ROAD	**5416**	**13960151.61**	**3455500.739**	**RC**	**29.68**	**28.57**	**29.62**	**-1.11**	**-0.06**
ROAD	**5417**	**13960172.23**	**3455601.264**	**RC**	**29.76**	**28.83**	**29.54**	**-0.93**	**-0.22**
ROAD	**5418**	**13960193.09**	**3455703.726**	**RC**	**29.78**	**28.89**	**29.65**	**-0.90**	**-0.13**
ROAD	**5419**	**13960212.75**	**3455804.071**	**RC**	**29.85**	**28.93**	**29.45**	**-0.92**	**-0.40**
ROAD	**5420**	**13960232.12**	**3455902.843**	**RC**	**29.84**	**28.82**	**29.67**	**-1.03**	**-0.17**
ROAD	**5421**	**13960253.32**	**3456007.032**	**RC**	**29.76**	**28.80**	**29.58**	**-0.96**	**-0.18**
ROAD	**5422**	**13960273.29**	**3456108.147**	**RC**	**29.74**	**28.79**	**29.68**	**-0.96**	**-0.06**

ROAD	5423	13960293.79	3456211.939	RC	29.68	28.76	29.70	-0.92	0.01
ROAD	5424	13960313.19	3456310.925	RC	29.62	28.51	29.52	-1.12	-0.10
ROAD	5425	13960333.05	3456410.585	RC	29.51	28.45	29.33	-1.06	-0.18
ROAD	5426	13960352.2	3456510.388	RC	29.52	28.49	29.16	-1.03	-0.36
ROAD	5427	13960372.11	3456608.497	RC	29.52	28.48	29.09	-1.03	-0.43
ROAD	5428	13960392.45	3456709.873	RC	29.40	28.35	29.14	-1.05	-0.26
ROAD	5429	13960413.19	3456813.52	RC	29.40	28.37	29.47	-1.02	0.07
ROAD	5430	13960433.16	3456916.796	RC	29.31	28.26	29.06	-1.05	-0.25
ROAD	5431	13960452.02	3457015.337	RC	29.34	28.26	29.24	-1.08	-0.11
ROAD	5432	13960472.08	3457118.476	RC	29.42	28.28	29.08	-1.14	-0.34
ROAD	5433	13960492.01	3457217.327	RC	29.44	28.53	29.17	-0.91	-0.26
ROAD	5434	13960512.08	3457318.062	RC	29.52	28.35	29.39	-1.17	-0.13
ROAD	5435	13960532.11	3457418.289	RC	29.61	28.52	29.08	-1.09	-0.54
ROAD	5436	13960552.42	3457521.025	RC	29.60	28.55	28.97	-1.05	-0.63
ROAD	5437	13960572.54	3457622.047	RC	29.64	28.56	29.16	-1.08	-0.48
ROAD	5438	13960592.29	3457721.529	RC	29.65	28.49	29.44	-1.16	-0.21
ROAD	5439	13960612.85	3457822.971	RC	29.77	28.63	29.52	-1.14	-0.25
ROAD	5440	13960632.48	3457922.293	RC	29.77	28.56	29.43	-1.20	-0.34
ROAD	5441	13960652.16	3458021.009	RC	29.81	28.67	29.80	-1.13	-0.01
ROAD	5442	13960672.89	3458122.275	RC	29.80	28.64	29.55	-1.17	-0.25
ROAD	5443	13960692.91	3458223.857	RC	29.83	28.70	29.64	-1.13	-0.19
ROAD	5444	13960711.75	3458322.389	RC	29.86	28.86	29.52	-0.99	-0.33
ROAD	5445	13960732.06	3458422.515	RC	30.00	28.94	29.56	-1.06	-0.44
ROAD	5446	13960751.65	3458521.684	RC	30.04	28.92	29.63	-1.11	-0.41
ROAD	5447	13960770.73	3458621.09	RC	30.16	29.04	29.81	-1.12	-0.35
ROAD	5448	13960790.41	3458719.208	RC	30.17	29.05	30.00	-1.11	-0.17
ROAD	5449	13960809.74	3458819.294	RC	30.25	29.06	29.87	-1.19	-0.38
ROAD	5450	13960829.79	3458919.857	RC	30.20	29.19	29.37	-1.02	-0.83
ROAD	5451	13960849.45	3459019.08	RC	30.25	29.31	29.95	-0.95	-0.30
ROAD	5452	13960869.01	3459119.363	RC	30.30	29.15	29.99	-1.15	-0.32
ROAD	5453	13960889.95	3459224.108	RC	30.27	29.09	30.06	-1.18	-0.21
ROAD	5454	13960956.76	3459429.022	CP TBM G1200	29.27	27.18	26.00	-2.10	-3.28
ROAD	5455	13960321.45	3456540.491	GB	26.92	25.92	25.34	-1.01	-1.59
ROAD	5456	13960333.62	3456537.839	GB	28.71	27.64	28.83	-1.06	0.12
ROAD	5457	13960336.41	3456536.721	RE ASPHALT	28.83	27.75	28.98	-1.08	0.16
ROAD	5458	13960357.19	3456533.132	RC ASPHALT	29.57	28.60	29.28	-0.97	-0.29
ROAD	5459	13960369.09	3456531.541	GB	29.86	28.64	29.74	-1.22	-0.12
ROAD	5460	13960381.12	3456528.447	RE ASPHALT	29.34	28.11	29.69	-1.22	0.35
ROAD	5461	13960388.43	3456527.521	GB	28.64	27.63	29.35	-1.01	0.71
ROAD	5462	13960398.58	3456525.856	GB	27.57	26.14	28.94	-1.44	1.37
ROAD	5463	13960408.92	3456524.377	DC	26.25	25.45	28.75	-0.80	2.50
ROAD	5464	13960416.18	3456523.568	GB	27.19	26.21	28.92	-0.98	1.72
ROAD	5465	13960426.14	3456521.55	GB	28.59	27.65	29.45	-0.94	0.85
ROAD	5466	13960435.95	3456519.542	RE ASPHALT	29.47	28.23	29.53	-1.24	0.06
ROAD	5467	13960448.1	3456517.928	GB	29.79	28.59	29.39	-1.20	-0.40
ROAD	5468	13960459.3	3456515.034	RC ASPHALT	29.93	28.93	29.23	-1.00	-0.70
ROAD	5469	13960470.64	3456512.147	GB	29.84	28.40	25.30	-1.44	-4.53
ROAD	5470	13960472.89	3456511.567	RE ASPHALT	29.39	28.40	24.43	-0.99	-4.96
ROAD	5471	13960479.23	3456510.007	GB	27.89	27.33	23.55	-0.56	-4.34
ROAD	5472	13960485.53	3456508.077	GB	26.02	23.95	21.63	-2.07	-4.39
ROAD	5473	13960486.15	3456507.956	HWL	25.96	23.95	21.63	-2.02	-4.34
ROAD	5474	13941142.73	3455879.671	RC	26.46	25.19	25.61	-1.27	-0.85
ROAD	5475	13941143.62	3455776.005	RC	26.37	25.12	24.83	-1.25	-1.54
ROAD	5476	13941155.52	3455672.839	RC	25.71	24.59	24.44	-1.11	-1.27
ROAD	5477	13941177.46	3455572.677	RC	25.03	23.84	24.87	-1.19	-0.17
ROAD	5478	13941204.19	3455476.146	RC	25.27	24.16	25.41	-1.11	0.14
ROAD	5479	13941234.48	3455379.427	RC	25.39	24.14	25.18	-1.25	-0.21
ROAD	5480	13941265.43	3455280.528	RC	25.15	23.86	24.97	-1.29	-0.18
ROAD	5481	13941296.92	3455183.784	RC	25.05	23.74	25.15	-1.30	0.11
ROAD	5482	13941326.35	3455088.173	RC	24.88	23.70	24.92	-1.18	0.03
ROAD	5483	13941355.93	3454991.185	RC	24.75	23.51	24.87	-1.24	0.12
ROAD	5484	13941382.75	3454894.691	RC	24.91	23.64	25.00	-1.28	0.09
ROAD	5485	13941405.85	3454795.869	RC	25.04	23.93	25.06	-1.11	0.02
ROAD	5486	13941424.12	3454697.397	RC	24.88	23.59	25.06	-1.30	0.17
ROAD	5487	13941439.79	3454596.64	RC	24.92	23.66	24.65	-1.26	-0.27
ROAD	5488	13941451.56	3454497.094	RC	24.89	23.54	24.76	-1.34	-0.12
ROAD	5489	13941460.35	3454393.544	RC	24.90	23.65	24.81	-1.25	-0.08
ROAD	5490	13941462.63	3454292.851	RC	24.69	23.39	24.58	-1.30	-0.11
ROAD	5491	13941463.58	3454188.787	RC	24.78	23.43	24.74	-1.35	-0.04
ROAD	5492	13941459.38	3454071.184	RC	24.70	23.45	24.51	-1.25	-0.19
ROAD	5493	13941455.39	3453969.148	RC	24.59	23.42	24.58	-1.17	-0.01
ROAD	5494	13941450.97	3453867.161	RC	24.70	23.57	24.84	-1.13	0.14
ROAD	5495	13941447.44	3453764.89	RC	24.45	23.28	24.51	-1.17	0.05
ROAD	5496	13941443.98	3453661.818	RC	24.60	23.38	24.49	-1.23	-0.11
ROAD	5497	13941440.45	3453561.835	RC	24.68	23.42	24.97	-1.26	0.29
ROAD	5498	13941435.37	3453461.768	RC	24.73	23.43	25.19	-1.30	0.46
ROAD	5499	13941431.89	3453361.405	RC	24.57	23.32	24.86	-1.25	0.29
ROAD	5500	13941427.06	3453261.143	RC	24.47	23.22	24.72	-1.25	0.25
ROAD	5501	13941422.46	3453156.94	RC	24.64	23.44	25.05	-1.20	0.41
ROAD	5502	13941417.79	3453055.278	RC	24.85	23.63	25.10	-1.22	0.25
ROAD	5503	13941413.4	3452950.963	RC	24.91	23.79	25.13	-1.12	0.23
ROAD	5504	13941408.04	3452849.583	RC	25.01	23.72	25.41	-1.29	0.40
ROAD	5505	13941403.68	3452746.512	RC	24.90	23.68	25.10	-1.22	0.21
ROAD	5506	13941399.12	3452642.419	RC	24.86	23.58	25.10	-1.28	0.24
ROAD	5507	13941394.28	3452541.554	RC	24.90	23.67	24.96	-1.23	0.06
ROAD	5508	13941389.32	3452441.657	RC	25.14	23.89	24.97	-1.24	-0.16
ROAD	5509	13941385.18	3452340.906	RC	25.25	24.07	25.33	-1.19	0.07
ROAD	5510	13941379.16	3452236.142	RC	24.91	23.65	24.84	-1.26	-0.07
ROAD	5511	13941375.26	3452135.456	RC	24.64	23.37	24.62	-1.27	-0.02
ROAD	5512	13941369.96	3452034.894	RC	24.55	23.22	24.54	-1.33	-0.01
ROAD	5513	13941364.89	3451933.124	RC	24.77	23.38	24.74	-1.39	-0.03
ROAD	5514	13941360.07	3451831.579	RC	24.94	23.62	24.78	-1.31	-0.15
ROAD	5515	13941354.96	3451729.934	RC	25.12	23.85	24.97	-1.27	-0.15
ROAD	5516	13941350.65	3451627.598	RC	25.24	23.91	24.80	-1.32	-0.44

ROAD	**5517**	**13941346.16**	**3451524.878**	**RC**	**25.35**	**24.08**	**25.06**	**-1.27**	**-0.29**
ROAD	**5518**	**13941341.34**	**3451420.938**	**RC**	**25.41**	**24.07**	**24.82**	**-1.34**	**-0.58**
ROAD	**5519**	**13941337.25**	**3451318.266**	**RC**	**25.43**	**24.17**	**25.08**	**-1.26**	**-0.35**
ROAD	5520	13920910.84	3448397.711	RC	25.38	5.84	15.44	-19.54	-9.94
ROAD	5521	13920963.33	3448310.554	RC	25.16	23.91	24.03	-1.24	-1.12
ROAD	5522	13921016.19	3448222.934	RC	24.94	23.54	23.73	-1.40	-1.21
ROAD	5523	13921069.58	3448135.166	RC	24.77	23.09	24.06	-1.68	-0.71
ROAD	5524	13921120.95	3448049.326	RC	24.34	22.85	22.94	-1.49	-1.40
ROAD	5525	13921172.47	3447963.444	RC	24.10	22.56	23.02	-1.55	-1.08
ROAD	5526	13921221.86	3447874.658	RC	23.82	22.23	22.97	-1.59	-0.85
ROAD	5527	13921267.12	3447782.238	RC	23.50	21.98	22.47	-1.52	-1.04
ROAD	5528	13921308.19	3447688.187	RC	23.24	22.11	21.48	-1.13	-1.76
ROAD	5529	13921343.12	3447593.372	RC	23.06	21.50	22.50	-1.57	-0.57
ROAD	5530	13921373.67	3447497.942	RC	22.92	21.52	20.95	-1.39	-1.96
ROAD	5531	13921398.95	3447394.976	RC	23.09	21.73	21.90	-1.36	-1.19
ROAD	5532	13921419.67	3447295.911	RC	23.16	21.59	22.03	-1.57	-1.13
ROAD	5533	13921435.99	3447194.939	RC	23.20	21.86	21.90	-1.34	-1.30
ROAD	5534	13921450.78	3447093.764	RC	23.18	21.69	22.19	-1.49	-0.98
ROAD	5535	13921462.72	3446992.634	RC	23.24	21.88	22.60	-1.36	-0.64
ROAD	5536	13921475.14	3446892.368	RC	23.16	21.69	22.41	-1.47	-0.75
ROAD	5537	13921486.87	3446792.647	RC	23.17	21.65	22.30	-1.52	-0.88
ROAD	5538	13921498.79	3446693.184	RC	23.31	21.96	22.72	-1.36	-0.59
ROAD	5539	13921511.11	3446591.789	RC	23.17	21.66	22.56	-1.50	-0.61
ROAD	5540	13921523.58	3446491.709	RC	23.38	21.80	22.55	-1.58	-0.83
ROAD	5541	13921536.88	3446387.537	RC	23.64	22.31	22.83	-1.32	-0.81
ROAD	5542	13921550.35	3446285.93	RC	23.68	22.24	22.93	-1.44	-0.75
ROAD	5543	13921562.82	3446185.406	RC	23.92	22.73	23.31	-1.19	-0.60
ROAD	5544	13921575.61	3446083.715	RC	23.94	22.68	23.37	-1.25	-0.57
ROAD	5545	13921588.87	3445982.971	RC	24.04	22.76	23.20	-1.27	-0.83
ROAD	5546	13921601.01	3445882.108	RC	24.17	22.82	23.75	-1.35	-0.42
ROAD	5547	13921613.43	3445782.396	RC	24.27	22.82	23.75	-1.45	-0.51
ROAD	5548	13921626.08	3445679.262	RC	24.29	22.87	23.89	-1.42	-0.40
ROAD	5549	13921637.87	3445579.122	RC	24.36	22.92	23.75	-1.43	-0.61
ROAD	5550	13921650.93	3445477.394	RC	24.31	23.02	23.59	-1.29	-0.73
ROAD	5551	13921663.69	3445376.517	RC	24.37	22.98	23.50	-1.39	-0.88
ROAD	5552	13921676.7	3445272.929	RC	24.43	23.08	23.86	-1.34	-0.57
ROAD	5553	13921689.93	3445171.151	RC	24.50	23.18	23.60	-1.33	-0.90
ROAD	5554	13920900.64	3448411.621	RC	25.37	11.59	16.81	-13.78	-8.55
ROAD	**5555**	**13920849.06**	**3448499.965**	**RC**	**24.91**	**23.47**	**23.75**	**-1.44**	**-1.16**
ROAD	**5556**	**13920796.47**	**3448586.805**	**RC**	**24.87**	**23.32**	**23.39**	**-1.55**	**-1.49**
ROAD	**5557**	**13920743.38**	**3448672.567**	**RC**	**24.38**	**22.98**	**23.01**	**-1.40**	**-1.36**
ROAD	**5558**	**13920687.01**	**3448756.744**	**RC**	**24.14**	**22.90**	**22.97**	**-1.24**	**-1.17**
ROAD	**5559**	**13920627.27**	**3448837.118**	**RC**	**23.85**	**22.45**	**22.63**	**-1.40**	**-1.22**
ROAD	**5560**	**13920563.36**	**3448914.683**	**RC**	**23.54**	**22.23**	**22.02**	**-1.31**	**-1.52**
ROAD	**5561**	**13920494.53**	**3448989.843**	**RC**	**23.31**	**21.93**	**22.53**	**-1.38**	**-0.78**
ROAD	**5562**	**13920421.27**	**3449061.608**	**RC**	**23.21**	**21.73**	**21.92**	**-1.48**	**-1.29**
ROAD	**5563**	**13920345.41**	**3449129.429**	**RC**	**23.09**	**21.63**	**21.77**	**-1.46**	**-1.31**
ROAD	**5564**	**13920265.09**	**3449192.094**	**RC**	**22.95**	**21.64**	**21.62**	**-1.31**	**-1.34**
ROAD	**5565**	**13920180.8**	**3449250.805**	**RC**	**22.98**	**21.81**	**21.72**	**-1.16**	**-1.25**
ROAD	**5566**	**13920095.55**	**3449303.995**	**RC**	**22.91**	**21.53**	**21.84**	**-1.38**	**-1.07**
ROAD	**5567**	**13920008.98**	**3449354.762**	**RC**	**22.78**	**21.45**	**22.10**	**-1.33**	**-0.69**
ROAD	**5568**	**13919922.68**	**3449410.849**	**RC**	**22.87**	**21.53**	**22.19**	**-1.34**	**-0.68**
ROAD	**5569**	**13919835.35**	**3449463.522**	**RC**	**23.10**	**21.59**	**22.09**	**-1.51**	**-1.01**
ROAD	**5570**	**13919749.29**	**3449516.055**	**RC**	**22.96**	**21.82**	**22.13**	**-1.14**	**-0.83**
ROAD	**5571**	**13919662.53**	**3449567.999**	**RC**	**23.02**	**21.56**	**22.22**	**-1.46**	**-0.79**
ROAD	**5572**	**13919574.88**	**3449619.574**	**RC**	**23.17**	**21.76**	**22.13**	**-1.42**	**-1.05**
ROAD	**5573**	**13919488.8**	**3449670.73**	**RC**	**23.00**	**21.74**	**22.16**	**-1.26**	**-0.84**
ROAD	**5574**	**13919400.69**	**3449723.385**	**RC**	**22.98**	**21.69**	**22.11**	**-1.29**	**-0.86**
ROAD	**5575**	**13919314**	**3449775.567**	**RC**	**23.09**	**21.86**	**22.16**	**-1.23**	**-0.93**
ROAD	**5576**	**13919226.1**	**3449828.451**	**RC**	**23.17**	**21.88**	**22.58**	**-1.29**	**-0.59**
ROAD	**5577**	**13919138.32**	**3449881.19**	**RC**	**23.02**	**21.70**	**21.59**	**-1.32**	**-1.43**
ROAD	**5578**	**13919050.54**	**3449934.026**	**RC**	**23.08**	**21.82**	**22.23**	**-1.26**	**-0.85**
ROAD	**5579**	**13918963.51**	**3449986.051**	**RC**	**23.06**	**21.68**	**21.65**	**-1.38**	**-1.41**
ROAD	**5580**	**13918877.46**	**3450037.349**	**RC**	**23.00**	**21.73**	**21.92**	**-1.27**	**-1.08**
ROAD	**5581**	**13918790.94**	**3450089.116**	**RC**	**22.92**	**21.60**	**22.06**	**-1.32**	**-0.86**
ROAD	**5582**	**13918704.63**	**3450140.352**	**RC**	**23.00**	**21.65**	**22.09**	**-1.34**	**-0.91**
ROAD	**5583**	**13918615.77**	**3450193.179**	**RC**	**22.99**	**21.63**	**22.09**	**-1.36**	**-0.90**
ROAD	**5584**	**13918527.68**	**3450246.065**	**RC**	**22.91**	**21.54**	**22.34**	**-1.37**	**-0.57**
ROAD	**5585**	**13918437.88**	**3450299.803**	**RC**	**22.96**	**21.83**	**21.88**	**-1.13**	**-1.08**
ROAD	**5586**	**13918350.26**	**3450353.225**	**RC**	**23.04**	**21.77**	**22.30**	**-1.26**	**-0.73**
ROAD	**5587**	**13918261.15**	**3450406.727**	**RC**	**22.91**	**21.77**	**22.16**	**-1.14**	**-0.76**
ROAD	**5588**	**13918173.62**	**3450459.784**	**RC**	**22.93**	**21.68**	**21.78**	**-1.25**	**-1.15**
SPILLWAY	5250	13921254.76	3448720.003	DT CONC SPILLWAY START	25.00	23.42	29.12	-1.59	4.11
SPILLWAY	5251	13921286.68	3448744.264	DE CONC SPILLWAY START	23.28	21.60	27.19	-1.68	3.91
SPILLWAY	5252	13921501.97	3448907.447	DE CONC SPILLWAY PI	23.22	21.50	27.98	-1.72	4.76
SPILLWAY	5253	13921552.01	3448949.869	DE CONC SPILLWAY PI	23.28	21.58	26.81	-1.71	3.53
SPILLWAY	5254	13922325.22	3449834.098	DE CONC SPILLWAY END	23.26	21.62	27.10	-1.63	3.84
SPILLWAY	5255	13922349.85	3449862.316	DT CONC SPILLWAY END	25.02	23.28	27.40	-1.74	2.38
SPILLWAY	5256	13922440	3449886.909	DT CONC SPILLWAY START	24.95	23.19	20.10	-1.75	-4.84
SPILLWAY	5257	13922456.79	3449871.117	DE CONC SPILLWAY START	22.86	21.37	16.52	-1.49	-6.33
SPILLWAY	5258	13922488.32	3449846.544	DE CONC SPILLWAY END	22.89	21.25	14.99	-1.64	-7.90
SPILLWAY	5259	13922507.81	3449834.267	DT CONC SPILLWAY END	24.96	23.57	18.18	-1.39	-6.78

Appendix C
2017 LIDAR Adjustment (based on Roadway Surfaces)

ID	Survey Z (ft)	LIDAR.2017 Z (ft)	LIDAR.2006 Z (ft)	LIDAR.2017 Z - Survey Z (ft)	LIDAR.2006 Z - Survey Z (ft)
5408	30.09	28.97	30	-1.12	-0.09
5409	29.79	28.74	29.56	-1.04	-0.23
5410	29.64	28.61	29.62	-1.04	-0.02
5411	29.55	28.39	29.24	-1.16	-0.31
5412	29.55	28.37	29.18	-1.18	-0.37
5413	29.63	28.53	29.42	-1.1	-0.21
5414	29.62	28.51	29.68	-1.1	0.06
5415	29.7	28.77	29.58	-0.93	-0.11
5416	29.68	28.57	29.62	-1.11	-0.06
5417	29.76	28.83	29.54	-0.93	-0.22
5418	29.78	28.89	29.65	-0.9	-0.13
5419	29.85	28.93	29.45	-0.92	-0.4
5420	29.84	28.82	29.67	-1.03	-0.17
5421	29.76	28.8	29.58	-0.96	-0.18
5422	29.74	28.79	29.68	-0.96	-0.06
5423	29.68	28.76	29.7	-0.92	0.01
5424	29.62	28.51	29.52	-1.12	-0.1
5425	29.51	28.45	29.33	-1.06	-0.18
5426	29.52	28.49	29.16	-1.03	-0.36
5427	29.52	28.48	29.09	-1.03	-0.43
5428	29.4	28.35	29.14	-1.05	-0.26
5429	29.4	28.37	29.47	-1.02	0.07
5430	29.31	28.26	29.06	-1.05	-0.25
5431	29.34	28.26	29.24	-1.08	-0.11
5432	29.42	28.28	29.08	-1.14	-0.34
5433	29.44	28.53	29.17	-0.91	-0.26
5434	29.52	28.35	29.39	-1.17	-0.13
5435	29.61	28.52	29.08	-1.09	-0.54
5436	29.6	28.55	28.97	-1.05	-0.63
5437	29.64	28.56	29.16	-1.08	-0.48
5438	29.65	28.49	29.44	-1.16	-0.21
5439	29.77	28.63	29.52	-1.14	-0.25
5440	29.77	28.56	29.43	-1.2	-0.34
5441	29.81	28.67	29.8	-1.13	-0.01
5442	29.8	28.64	29.55	-1.17	-0.25
5443	29.83	28.7	29.64	-1.13	-0.19
5444	29.86	28.86	29.52	-0.99	-0.33
5445	30	28.94	29.56	-1.06	-0.44
5446	30.04	28.92	29.63	-1.11	-0.41
5447	30.16	29.04	29.81	-1.12	-0.35
5448	30.17	29.05	30	-1.11	-0.17
5449	30.25	29.06	29.87	-1.19	-0.38
5450	30.2	29.19	29.37	-1.02	-0.83
5451	30.25	29.31	29.95	-0.95	-0.3
5452	30.3	29.15	29.99	-1.15	-0.32
5474	26.46	25.19	25.61	-1.27	-0.85
5475	26.37	25.12	24.83	-1.25	-1.54
5476	25.71	24.59	24.44	-1.11	-1.27
5477	25.03	23.84	24.87	-1.19	-0.17
5478	25.27	24.16	25.41	-1.11	0.14
5479	25.39	24.14	25.18	-1.25	-0.21
5480	25.15	23.86	24.97	-1.29	-0.18
5481	25.05	23.74	25.15	-1.3	0.11
5482	24.88	23.7	24.92	-1.18	0.03
5483	24.75	23.51	24.87	-1.24	0.12
5484	24.91	23.64	25	-1.28	0.09
5485	25.04	23.93	25.06	-1.11	0.02
5486	24.88	23.59	25.06	-1.3	0.17
5487	24.92	23.66	24.65	-1.26	-0.27
5488	24.89	23.54	24.76	-1.34	-0.12
5489	24.9	23.65	24.81	-1.25	-0.08
5490	24.69	23.39	24.58	-1.3	-0.11
5491	24.78	23.43	24.74	-1.35	-0.04
5492	24.7	23.45	24.51	-1.25	-0.19
5493	24.59	23.42	24.58	-1.17	-0.01
5494	24.7	23.57	24.84	-1.13	0.14
5495	24.45	23.28	24.51	-1.17	0.05
5496	24.6	23.38	24.49	-1.23	-0.11
5497	24.68	23.42	24.97	-1.26	0.29
5498	24.73	23.43	25.19	-1.3	0.46
5499	24.57	23.32	24.86	-1.25	0.29
5500	24.47	23.22	24.72	-1.25	0.25
5501	24.64	23.44	25.05	-1.2	0.41
5502	24.85	23.63	25.1	-1.22	0.25
5503	24.91	23.79	25.13	-1.12	0.23
5504	25.01	23.72	25.41	-1.29	0.4
5505	24.9	23.68	25.1	-1.22	0.21
5506	24.86	23.58	25.1	-1.28	0.24
5507	24.9	23.67	24.96	-1.23	0.06
5508	25.14	23.89	24.97	-1.24	-0.16
5509	25.25	24.07	25.33	-1.19	0.07
5510	24.91	23.65	24.84	-1.26	-0.07
5511	24.64	23.37	24.62	-1.27	-0.02
5512	24.55	23.22	24.54	-1.33	-0.01
5513	24.77	23.38	24.74	-1.39	-0.03
5514	24.94	23.62	24.78	-1.31	-0.15
5515	25.12	23.85	24.97	-1.27	-0.15
5516	25.24	23.91	24.8	-1.32	-0.44
5517	25.35	24.08	25.06	-1.27	-0.29
5518	25.41	24.07	24.82	-1.34	-0.58
5519	25.43	24.17	25.08	-1.26	-0.35
5555	24.91	23.47	23.75	-1.44	-1.16
5556	24.87	23.32	23.39	-1.55	-1.49
5557	24.38	22.98	23.01	-1.4	-1.36
5558	24.14	22.9	22.97	-1.24	-1.17
5559	23.85	22.45	22.63	-1.4	-1.22
5560	23.54	22.23	22.02	-1.31	-1.52
5561	23.31	21.93	22.53	-1.38	-0.78
5562	23.21	21.73	21.92	-1.48	-1.29
5563	23.09	21.63	21.77	-1.46	-1.31
5564	22.95	21.64	21.62	-1.31	-1.34
5565	22.98	21.81	21.72	-1.16	-1.25
5566	22.91	21.53	21.84	-1.38	-1.07
5567	22.78	21.45	22.1	-1.33	-0.69
5568	22.87	21.53	22.19	-1.34	-0.68
5569	23.1	21.59	22.09	-1.51	-1.01
5570	22.96	21.82	22.13	-1.14	-0.83
5571	23.02	21.56	22.22	-1.46	-0.79
5572	23.17	21.76	22.13	-1.42	-1.05
5573	23	21.74	22.16	-1.26	-0.84
5574	22.98	21.69	22.11	-1.29	-0.86
5575	23.09	21.86	22.16	-1.23	-0.93
5576	23.17	21.88	22.58	-1.29	-0.59
5577	23.02	21.7	21.59	-1.32	-1.43
5578	23.08	21.82	22.23	-1.26	-0.85
5579	23.06	21.68	21.65	-1.38	-1.41
5580	23	21.73	21.92	-1.27	-1.08
5581	22.92	21.6	22.06	-1.32	-0.86
5582	23	21.65	22.09	-1.34	-0.91
5583	22.99	21.63	22.09	-1.36	-0.9
5584	22.91	21.54	22.34	-1.37	-0.57
5585	22.96	21.83	21.88	-1.13	-1.08
5586	23.04	21.77	22.3	-1.26	-0.73
5587	22.91	21.77	22.16	-1.14	-0.76
5588	22.93	21.68	21.78	-1.25	-1.15
			avg =	**-1.20**	**-0.40**
			RMSE =	**1.21**	**0.63**