

# Appendix 2

## New Orleans East Basin

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### NOE – Background

The New Orleans East hurricane protection system was designed as part of the Lake Pontchartrain, LA, and Vicinity Hurricane Protection Project. The New Orleans East (NOE) portion of the project protects 45,000 acres of urban, industrial, commercial, and ecological lands. As designed, the levees were generally constructed with a 10-foot crown width with side slopes of 1 on 3. The height of the levees varies but was in the range of 12–19 feet, depending upon location. There are also various types of floodwall segments along the line of protection. As designed, there is a total of approximately 206,000 linear feet of levees and floodwalls, eight pump stations, three U.S. Fish and Wildlife Service (USFWS) pump stations, a multitude of culverts through/over the levee/floodwall, and multiple gate closures for road and rail crossings. The NOE basin is essentially broken into two major sections, as shown in Figure NOE 1. The west side of the basin is primarily residential and the east side is essentially a wetlands area. These two areas are separated by a small levee. The west side of the basin is further divided into residential and industrial areas. The area along the GIWW and IHNC is primarily industrial while the remainder of the western portion is residential in nature.

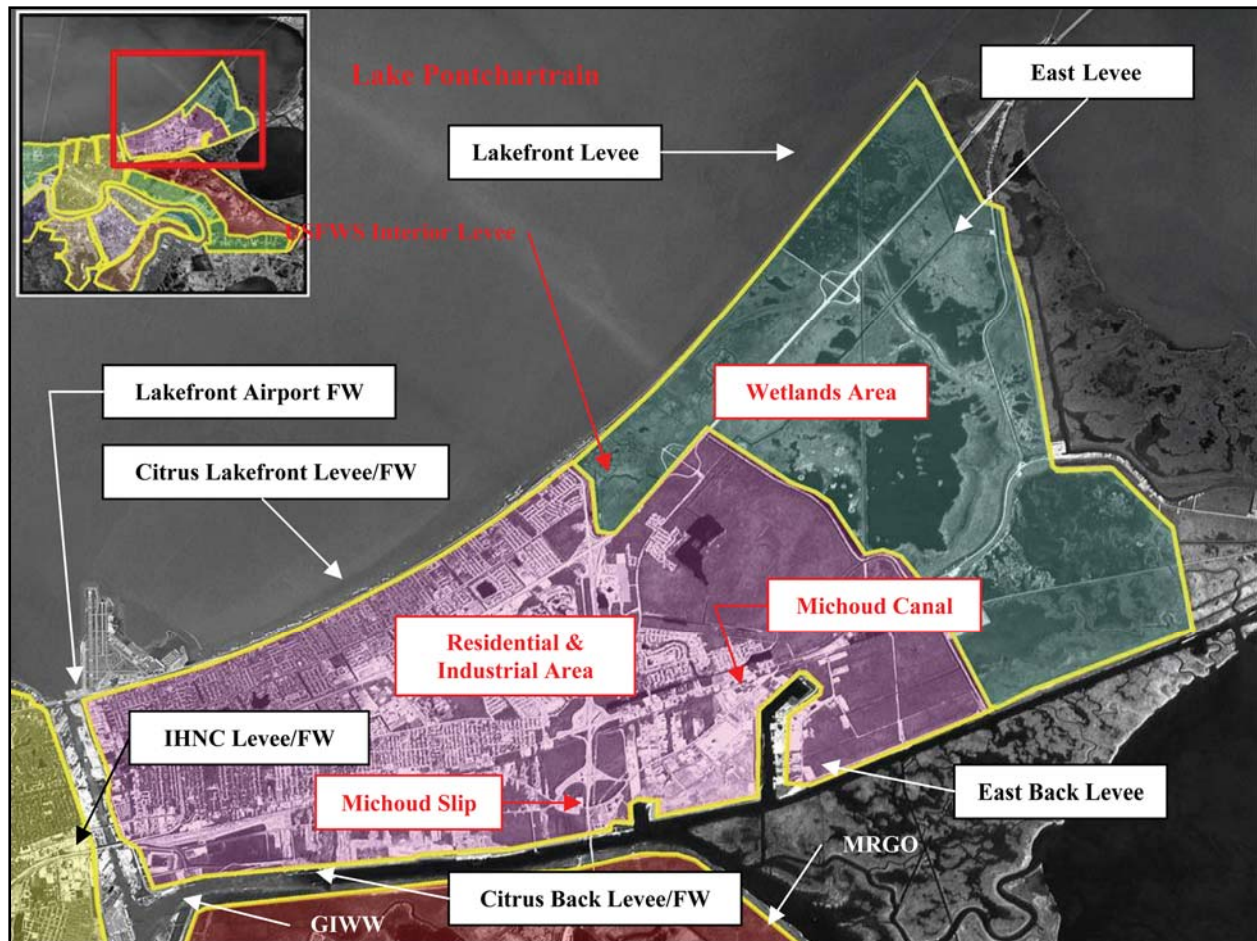


Figure NOE 1. New Orleans East Basin – Major Stretches by DM

## NOE – Design Memorandums

For the purposes of the IPET Task 10 risk assessment, each basin must be broken into “reaches” that are defined by a combination of physical characteristics, major elevation changes, and potential consequences. Many of the basic reaches were defined by when individual design memorandums (DM) were completed and then constructed since different stretches of the levee/floodwall were raised at different times throughout the life of the NOE protection system. There are a total of 7 levee/floodwall major stretches separated by different DM’s within NOE. These 7 are defined below and illustrated in Figure 1.

- **Lakefront Airport Floodwall**
  - Beginning Point: Northwest corner of basin below Ted Hickey Bridge
  - Ending Point: End of floodwall just south of Hayne Blvd closure gate
- **Citrus Lakefront Levee/Floodwall**
  - Beginning Point: Begin transition levee just south of Hayne Blvd closure
  - Ending Point: Levee height transition at Paris Road and USFWS levee
- **Lakefront Levee**
  - Beginning Point: Levee transition at Paris Road and USFWS interior levee

- Ending Point: South Point at northeast end of basin
- **East Levee**
  - Beginning Point: South Point at northeast corner of basin
  - Ending Point: GIWW at southeast corner of basin
- **East Back Levee**
  - Beginning Point: GIWW at southeast corner of basin
  - Ending Point: Northeast end of Michoud Canal floodwall
- **Citrus Back Levee/Floodwall**
  - Beginning Point: Northeast end of Michoud Canal floodwall
  - Ending Point: Southwest corner of basin at IHNC
- **IHNC East Levee/Floodwall**
  - Beginning Point: Southwest corner of basin at IHNC
  - Ending Point: Northwest corner of basin under Ted Hickey Bridge

## **NOE Basin – Layout of Reaches for Risk Model (Pre-Katrina)**

Within these major stretches defined by the DM's there are reaches, which are defined by physical changes in the protection system, i.e. switching from floodwall to levee, etc..., or by changes in geotechnical parameters. Within each reach, there are specific "key points" whose reliability needs to be determined in order to calculate the effect on the overall reach being evaluated. An example of a "key point" would be a closure gate at a road or rail line crossing along a floodwall. In addition, there are transition points between walls and levees that are also a critical part of the risk analysis, particularly since several of these transition points were locations where significant scour damage occurred during Katrina. Task 10 engineers reviewed existing plans, damage survey reports, and conducted field verification inspections to ensure each basin was accurately defined within the system. As a part of the field verification inspections, GPS coordinates were obtained and stationing from DM's and "as-built" plans were verified. For each basin, this information was transformed into a spread sheet and then a system map for each basin, as shown in Figure NOE 2 and further clarified in Figure NOE 3 for "congested" areas where several shorter reaches are close together. Finally, digital photographs with incorporated notes were developed to compliment the spread sheets and system map for further clarification. This collection of information was then categorized to get a clear picture of how the basin should be defined for risk assessment purposes. There are a couple of interior, local levees, but these are not considered substantial hurricane protection systems and are only used to define the interior drainage within the basin itself. Therefore, they are not shown and defined within the context of the risk model other than for flow characteristics.

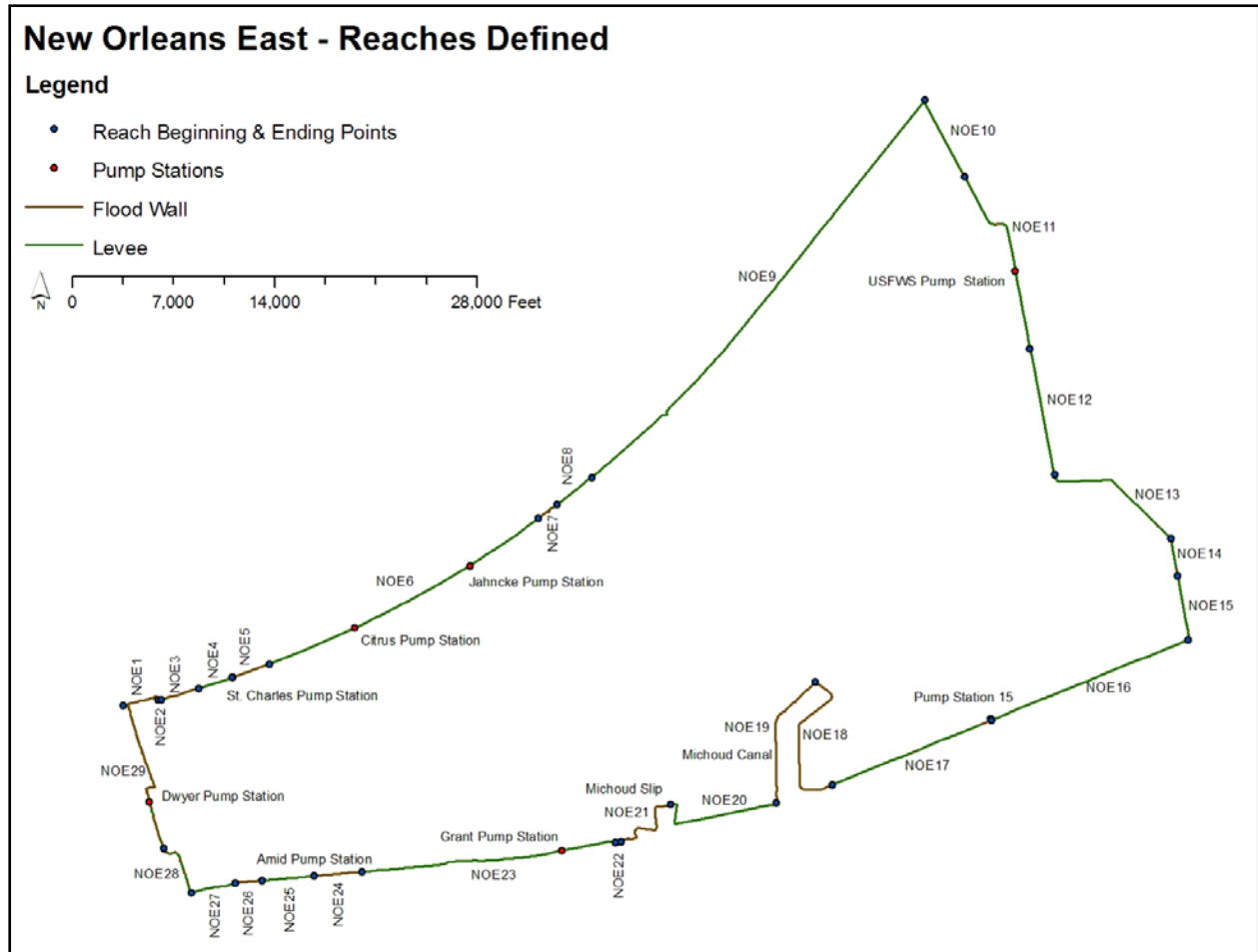


Figure NOE 2. New Orleans East Basin – Reaches Defined

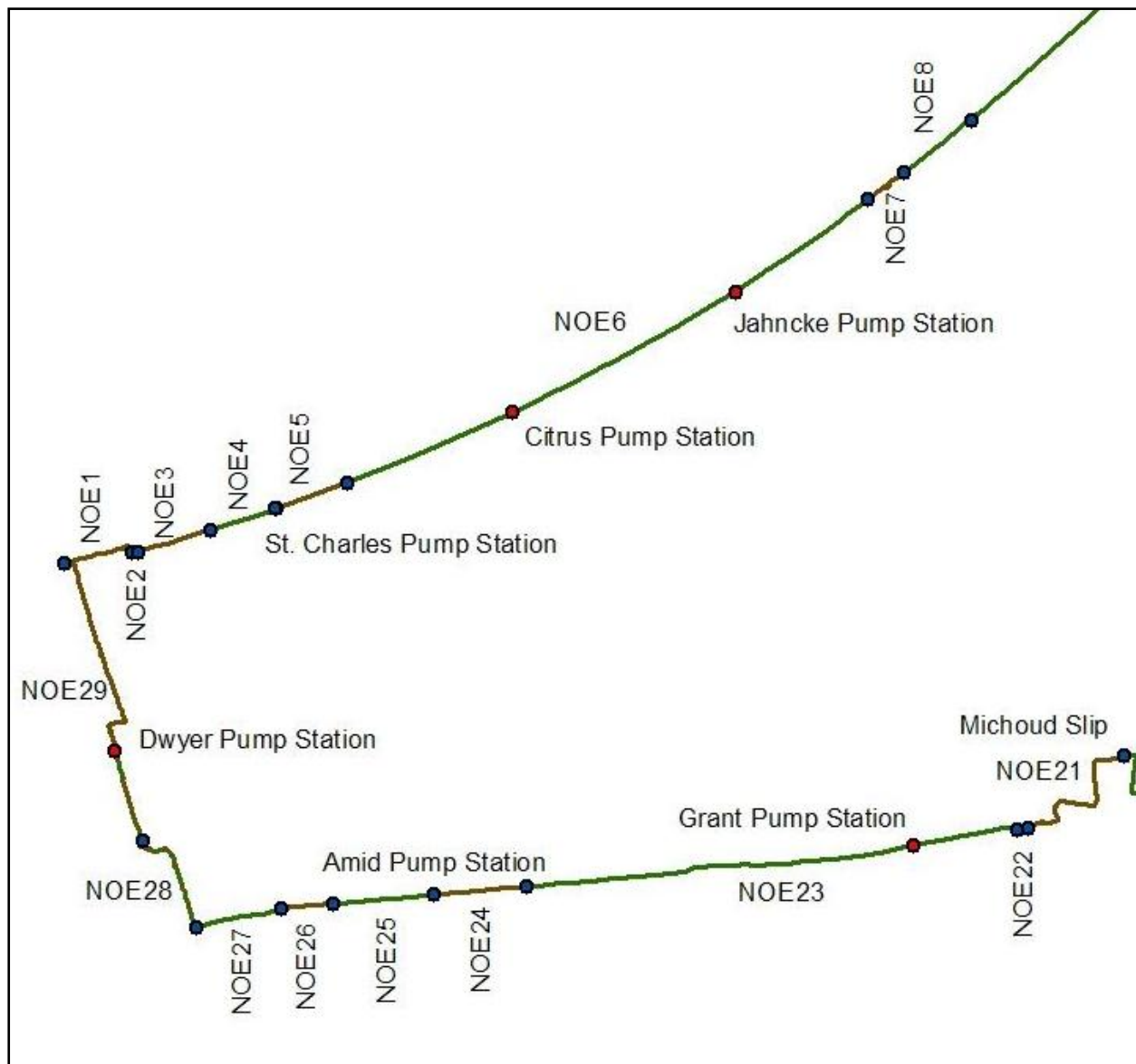


Figure NOE 3. New Orleans East Basin – (Refer to Figure NOE 2)

Task 10 basin definition starts at the northwest corner of the basin where the floodwall along the IHNC intersects the floodwall along the Lakefront Airport (Reach NOE1). This occurs at Sta. 4+02 B/L, which is equal to the DM stationing of 10+13 W/L. The end of the physical definition of the NOE basin occurs at the same point since it is self enclosed. Refer to Figures NOE 2 and NOE 3 for the general location of the reach as the basic characteristics are detailed within this narrative.

### Reach NOE1 (Lakefront Airport DM)

This reach is composed of a concrete I-wall along the Lakefront Airport. It is located at the northwest end of the basin. There are three features within this reach, all closure gates, located near the start and end of this reach. Relatively short t-wall sections surround the gate closures.

The reach ends just after the second closure gate for Hayne Boulevard. The weighted average elevation of the top of this wall is shown in the table below, and is based upon a physical survey taken November 2005 and data from MVN surveys in 2006. There was significant scour from limited overtopping and/or wave splash along this section of I-wall, as shown in Figure NOE 4, but there was no permanent deformation of the wall.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type(W/L)	Foundation Material Type (H, C, P)	Subpolder Reference
NOE1	2,405	10.80	W	H	NOE5



Figure NOE 4. Scour Behind Lakefront Airport FW from Overtopping

### Reach NOE2 (Citrus Lakefront DM)

This reach is defined by a short transition levee between the end of the Lakefront Airport floodwall, goes up the CSX railroad beds and ends at the beginning of the west Stars & Stripes floodwall. There are no features within this reach; however, there is one transition which is a ramp where the levee ties from the concrete capped I-wall to the railroad track. One of these transition points is shown in Figure NOE 5 where the scour occurred during Katrina. The weighted average height of this reach is shown in the table below, and was based upon MVN survey data in 2006.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type(W/L)	Foundation Material Type (H, C, P)	Subpolder Reference
NOE2	250	10.80	L	H	NOE5

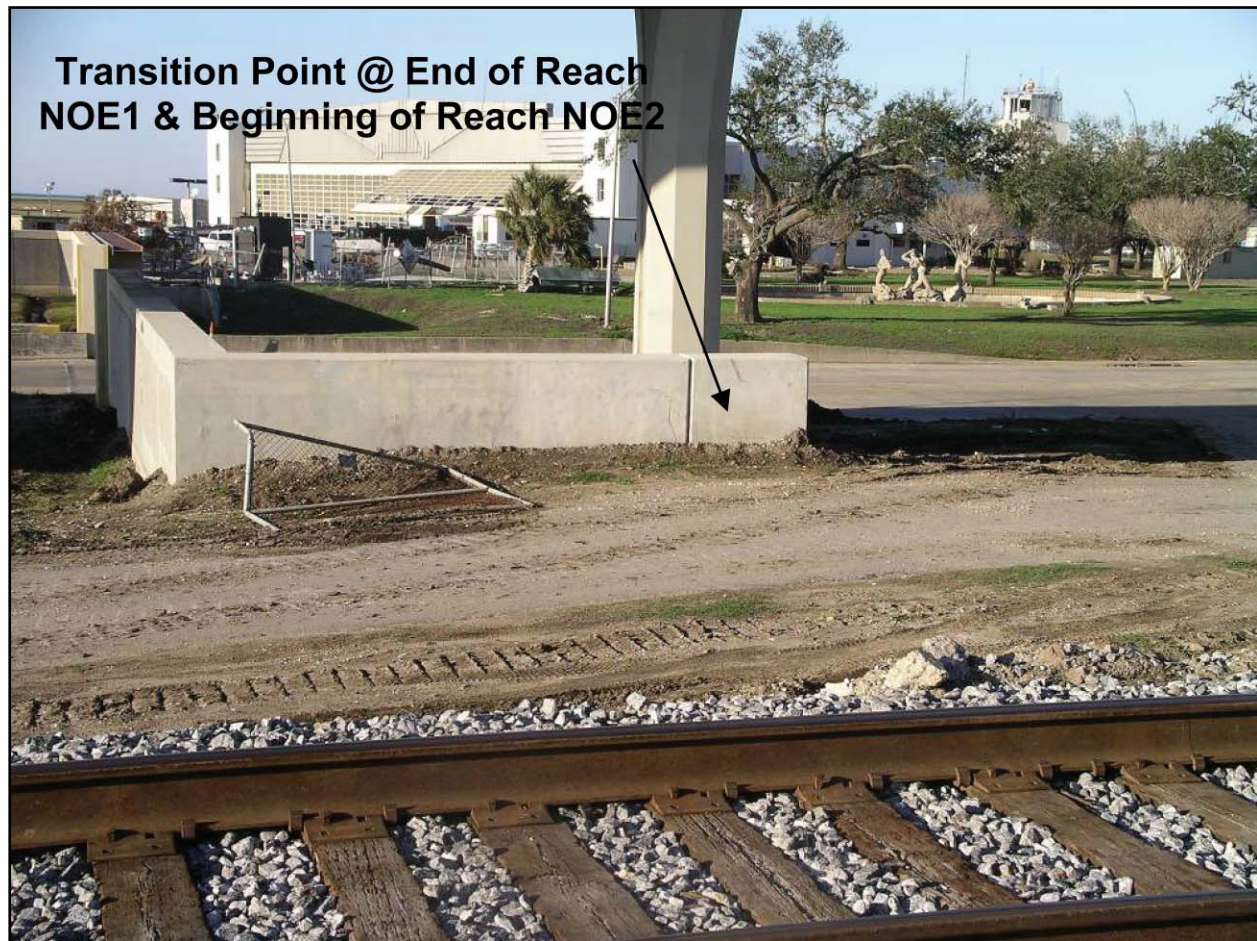


Figure NOE 5. Transition Point Between Reaches (NOE 1 & NOE 2) (Viewed from Reach NOE2 looking north towards Lakefront Airport)

### Reach NOE3 (Citrus Lakefront DM)

This reach is composed of a concrete capped I-wall. This reach is commonly referred to as the west Stars & Stripes floodwall. There are two basic types of floodwall along this reach, each consisting of about ½ the length of this reach. The first type is a concrete capped I-wall with levee on both sides and the second is a concrete I-wall section where the protected side has a concrete sidewalk adjacent to a road. There are two transition points at each end of the I-wall/levee interface at the ends of this reach. The weighted average top of wall elevation along this reach is shown in the table below, and is based upon a physical survey taken by MVN in 2006. The transition between the levee and the east Stars & Stripes floodwall is shown in Figure NOE 6.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE3	2,325	10.80	W	H	NOE5

### Reach NOE4 (Citrus Lakefront DM)

This reach is defined by the Stars and Stripes levee. It is located between the west and east Stars and Stripes floodwalls. A small concrete I-wall for the discharge pipes at the St. Charles Pump Station is located near the east end of this reach. There are no key points within this reach, but there are two transition points where the levee abuts both Stars and Stripes floodwalls. The ends of the St. Charles Pump Station floodwall are not considered transition points since they are essentially flush with the top of the levee. The weighted average top elevation of this reach is shown in the table below, and was based upon a physical survey taken by MVN in 2006.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE4	2,330	10.80	L	H	NOE5





Figure NOE 6. Transition between Reaches NOE4 (Levee) and NOE5 (FW)

### Reach NOE5 (Citrus Lakefront DM)

This reach is defined by a concrete I-wall. It is commonly referred to as the east Stars and Stripes floodwall. There are two transition points within this reach at each end of the levee/I-wall interface. The weighted average top of wall elevation for this reach is shown in the table below, and was based upon a physical survey done taken by MVN in 2006. This wall was not damaged during Katrina.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE5	2,270	10.80	W	H	NOE5

### Reach NOE6 (Citrus Lakefront DM)

This reach is defined by a levee. It begins at the end of the east Stars & Stripes floodwall and ends at the west side of the Lincoln Beach floodwall. There are a couple of short, small floodwall sections within this reach located at the Citrus and Jahncke Pump Stations; however, these are very short walls that are not considered significant within the overall characteristics of the reach.

The weighted average elevation for the top of this reach is shown in the table below, and was based upon a physical survey done taken by MVN in 2006. There was some minor overtopping and/or wave splash over this levee at various locations, as indicated in Figure NOE 7, but no significant damage to the levee.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE6	19,110	13.00	L	H	NOE5



Figure NOE 7. Minor Scour from Overtopping at Jahncke Pump Station

### Reach NOE7 (Citrus Lakefront DM)

This reach is defined by a concrete I-wall located at Lincoln Beach. There is one key point located in the flood wall, which is a closure gate that is approximately 100 feet wide. Short concrete T-walls surround the gate. There are two transitions at the I-wall/levee interface at both ends of the wall. The weighted average top of wall elevation for this reach is shown in the table below, and was based upon a physical survey taken by MVN in 2006. The wall was overtopped during Katrina and performed very well. The Lincoln Beach floodwall is shown in Figure NOE 8 for reference.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE7	1,475	13.00	W	H	NOE5



Figure NOE 8. Lincoln Beach Floodwall (Reach NOE7) (Looking west from Reach NOE8)

### Reach NOE8 (Citrus Lakefront DM)

This reach of levee starts at the end of the Lincoln Beach Floodwall and ends at the intersection of Paris Road, the interior local levee, and the start of the Lakefront Levee. There

are no features or transitions within this reach. The weighted average top elevation of this levee is shown in the table below, and was based a physical survey taken by MVN in 2006. This section was overtopped and damaged during Katrina, primarily in the area where the lower Citrus Lakefront levee section transitions to the higher East Lakefront Levee section as shown in Figure NOE 9.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE8	2,725	13.00	L	H	NOE5



Figure NOE 9. Begin Lakefront Levee at Citrus Lakefront and Paris Road (Lakefront Levee @ El. 18.6± and Citrus Lakefront Levee @ 12.6±)

### Reach NOE9 (Lakefront Levee DM)

This reach covers a stretch of levee along Lake Pontchartrain from Paris Road to South Point, which is the extreme northeast corner of the basin. There is an I-wall around the Exxon/Mobil pipeline crossing that provides the only transition point within the reach. The weighted average top elevation of this reach is shown on the table below, and was based upon was based a physical

survey taken by MVN in 2006. This reach was not overtopped or damaged to any significant extent during the storm.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE9	32900	18.20	L	H	NOE1

### Reach NOE10 (East Levee DM)

This reach is defined by a segment of levee from South Point to where Highway 90 crosses the levee. There are four transition points within this stretch, including three different drainage culvert headwalls on the levee toe. The other remaining transition point is for the floodwall surrounding the gated closure at Highway 11. The gated closure at Highway 11 represents the only gates within the reach as well. The weighted average top elevation of this levee is shown in the table below, and was based upon was based a physical survey taken by MVN in 2006. This section was slightly overtopped or subject to wave splash during Katrina, but suffered minimal damage other than at transition points.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE10	5,830	13.80	L	H	NOE1

### Reach NOE11 (East Levee DM)

This levee extends southeast from Highway 11 and serves as the section where the levee design was modified to account for wave action. There are no “key points” located within this reach. The weighted average top elevation of this reach is shown on the table below, and was based upon a physical survey taken by MVN in 2006. It is believed that this section of levee suffered minor overtopping and/or wave splash, but overall it performed well.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE11	13,325	14.00	L	H	NOE1

### Reach NOE12 (East Levee DM)

The final reach of levee along the East section extends to the GIWW with a weighted average top elevation as shown in the table below. This elevation was based upon based a physical survey taken by MVN in 2006. There are two transition points within this reach including a short sheet pile wall around a drainage structure and transition concrete I-walls around a railroad crossing. There is one key point, the railroad gated closure, which is included in this reach. At the time of Katrina, the railroad closure gate and transition walls were roughly 4 feet lower than the adjacent levee and was overtopped and heavily damaged during the storm. An aerial view of this damage is shown in Figure NOE 10.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE12	8,910	15.00	L	H	NOE1



Figure NOE 10. Aerial View of Damage at RR Closure Along East Levee

### Reach NOE13 (East Back Levee DM)

This section of levee was heavily damaged during Katrina from overtopping. Prior to Katrina, it had a weighted average top elevation as shown in the table below, and was based upon an adjusted LIDAR survey that was taken before the storm. It begins at the east end where it ties into the southern edge of the East Levee and continues to the east end of the floodwall around the Orleans Parish Pump Station #15. There are no features or transitions within this reach. Much of this levee was destroyed, as shown in Figure NOE 11.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE13	9,185	15.80	L	H	NOE1



Figure NOE 11. Failure of Levee by Overtopping East of Pump Station #15 (East Back Levee)

### Reach NOE14 (East Back DM)

This reach is defined by the floodwall around Orleans Parish Pump Station #15. There were two types of walls within this reach prior to Katrina, two 120-ft transition sheet pile walls at the both ends of a middle 253-ft T-wall section. The total length of this reach is 493 feet. Portions of the transition sheet pile sections were heavily damaged during Katrina as shown in Figure NOE 12. There are no key or transition points assigned to this reach.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE14	2,615	16.00	L	H	NOE1



Figure NOE 12. Floodwall Failure Near Orleans Pump Station #15

### Reach NOE15 (East Back DM)

This section of levee extends from the west end of the Orleans Parish Pump Station #15 floodwall to the start of the floodwall on the east side of the Michoud Canal at the GIWW. This levee section had a weighted average top elevation as shown in the table below at the time of Katrina based upon an adjusted LIDAR survey taken prior to the storm. There are no key points, but two transition points assigned to this reach. Both transition points are for levee/floodwall interfaces at both ends of this reach. This reach was heavily damaged during Katrina and was rebuilt under TFG.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE15	4,470	16.00	L	H	NOE1

### Reach NOE16 (East Back DM)

This reach consists of the east floodwall around the Michoud Canal. It is primarily concrete capped I-wall, but has a short transition sheet pile wall at the beginning of the reach. It had a



weighted average top elevation as shown in the table below, and was based upon a physical survey taken by MVN in 2006. The reach starts at the GIWW and continues along the Michoud Canal where it joins with the Citrus Back floodwall. There are 18 key points along this reach for gated closures at industry and road crossings. However, from site inspections, it appears as if five of these gates are placed in the permanently closed position. As shown in Figure NOE 13, the transition sheet pile floodwall at the beginning of this reach failed during Katrina. This section was rebuilt under TFG. The concrete capped I-wall section was overtopped and suffered significant scour as shown in Figure NOE 14, but performed well. There are no transition points assigned to this reach.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE16	13,045	16.00	L	H	NOE1

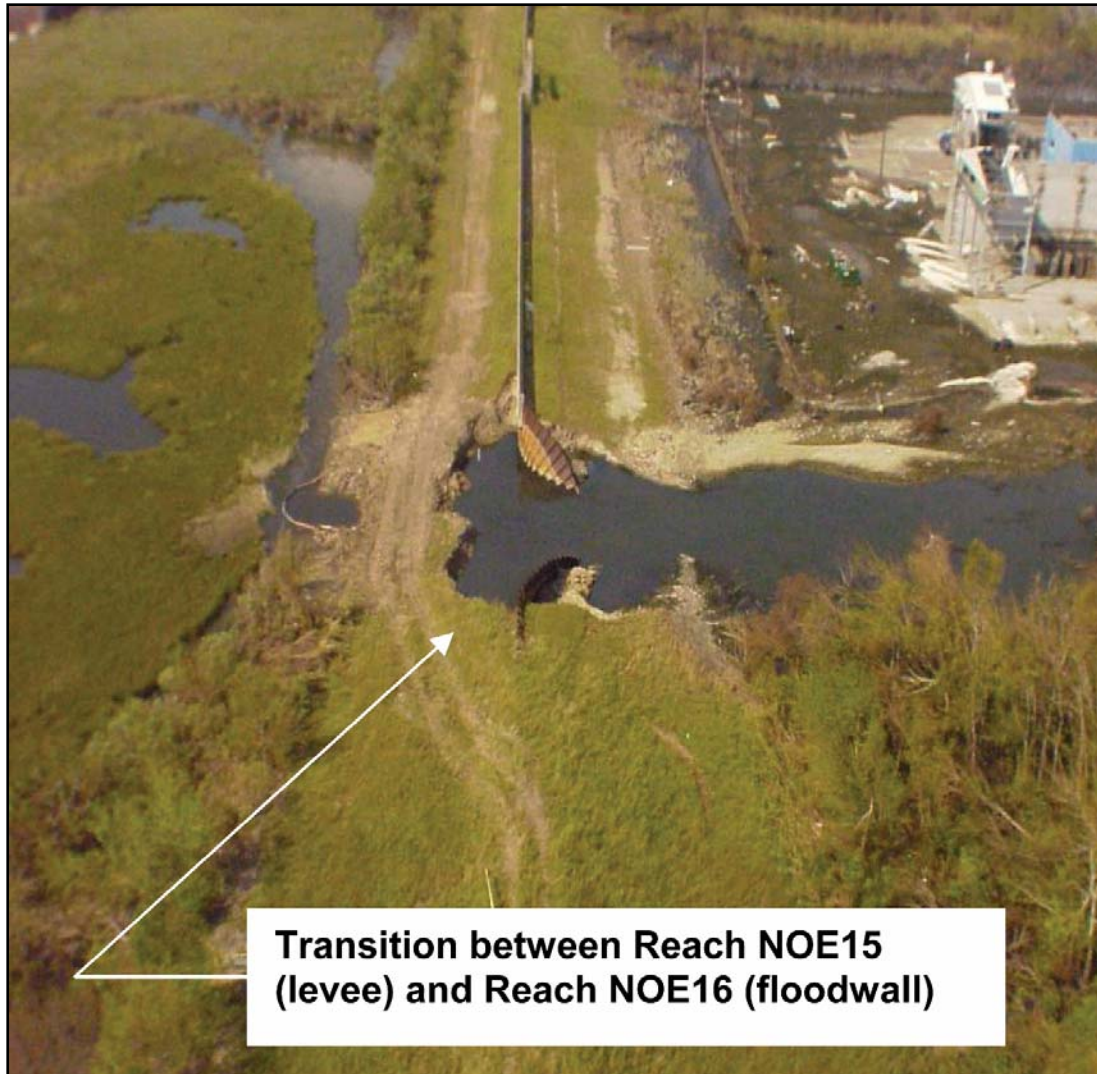


Figure NOE 13. Floodwall Failure at East End of Michoud Canal FW



Figure NOE 14. Scour Damage Behind Michoud Canal Floodwall

### Reach NOE17 (Citrus Back DM)

The beginning of this reach starts at the northwest end of the Michoud Canal and ends at the southwest side of the Michoud Canal at the GIWW. This reach consists of floodwall with an average weighted top elevation as shown in the table below, which was based upon a physical survey taken by MVN in 2006. This section was overtopped during Katrina but suffered only minor scour problems. There are no key or transition points assigned to this reach.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE17	10,570	16.00	L	H	NOE2

### Reach NOE18 (Citrus Back DM)

This reach represents the segment of levee between the Michoud Canal and Michoud Slip. There are no key points within this reach of levee, but there are two transition points where the levee ties into floodwalls on both ends. This reach had a weighted average top elevation as shown in the table below at the time of Katrina, and was based upon a physical survey taken by MVN in 2006.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE18	10,760	17.90	W	H	NOE2

### Reach NOE19 (Citrus Back DM)

The reach represents the floodwall around the Michoud Slip. There are two key points (gated closure) within this reach, but no transition points assigned to this reach. This reach has a weighted average top elevation as shown in the table below, and was based upon a physical survey taken by MVN in 2006. This section of wall suffered minimal scour damage during Katrina.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE19	9,320	17.90	W	H	NOE3

### Reach NOE20 (Citrus Back DM)

This reach consists of the levee between the west end of the Michoud Slip and the east end of the combination floodwall for the bulk loading facility. There are two transition points assigned to this reach where the levee ties into floodwalls at both ends. There are no key points within this reach. This reach has a weighted average top elevation as shown in the table below, and was based upon physical survey data by MVN in 2006. Portions of this levee were overtopped during

Katrina with moderate areas of scour damage, as shown in Figure NOE 15, but there were no major breaches in this reach

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE20	7,905	16.00	L	H	NOE3



Figure NOE 15. Scour Damage Along Citrus Back Levee

### Reach NOE21 (Citrus Back DM)

This reach is defined by the combination floodwall built for the Bulk Loading Facility and Elaine Pump Station. This wall was heavily damaged during Katrina, as shown in Figure NOE 16, and was repaired under TFG. Prior to Katrina, it had a top elevation as shown by the table below, and was based upon both physical survey by MVN in 2006. There is one key point, gate N1 for the Bulk Loading Facility, within this reach. There are no transition points assigned to this reach.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE21	5520	16.00	W	H	NOE3



Figure NOE 16. Floodwall Failure at Bulk Loading Facility/Elaine PS

### Reach NOE22 (Citrus Back DM)

This reach is for the levee between the floodwall at the Bulk Loading Facility/Elaine PS (east side of reach) and the floodwall that is just east of the Amid Pump Station (west side of reach). There are no key points within this reach, but there are two transition points where the levee ties into the adjacent floodwalls on both ends. It had a weighted average top elevation as shown in the table below prior to Katrina, and was based upon physical survey data by MVN in 2006. There was minor overtopping of this reach during Katrina with no significant damage.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE21	385	16.00	L	H	NOE3

### Reach NOE23 (Citrus Back DM)

This reach is the section of floodwall located just east of the Amid Pump Station. This wall did suffer minor overtopping, but no major damage. It had a weighted average top elevation as shown in the table below, and was based upon a physical survey taken in November 2005. There are no key or transition points assigned to this reach.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE23	15,320	13.90	L	H	NOE4

### Reach NOE24 (Citrus Back DM)

The final reach of the Citrus Back Levee stretch is a levee extending from the end of the floodwall just east of the Amid Pump Station to its tie in with the Inner Harbor Navigation Canal (IHNC) east levee. There is one key point (railroad closure gate) located within this reach and two transition points (railroad closure transition I-walls and the end of the I-wall near the Amid Pump Station). The transition around the railroad closure structure was overtopped and sustained significant scour damage, as shown in Figure NOE 17. This reach had a weighted average top elevation as shown in the table below, and was based upon an adjusted LIDAR survey taken prior to Katrina.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE24	2,910	13.80	W	H	NOE4



Figure NOE 17. Erosion Damage Around RR Closure (Near GIWW and IHNC Intersection)

### Reach NOE25 (IHNC DM)

This reach consists primarily of levee with several gated closures. The weighted average top elevation of this reach is shown on the table below, and was based upon an adjusted LIDAR survey taken prior to Katrina. There are four closure gates, each a key point, within this reach; all of which suffered erosion damage from overtopping during Katrina. Each of these four closure structures has short adjoining I-walls which represent four transition points that are assigned to this reach. There is one additional transition point assigned to this reach where the end of the levee ties into the beginning of the floodwall, as shown in Figure NOE 19. A typical example of the scour damage around these closure structures is shown in Figure NOE 18. Structural damage was minimal to these closure structures. The very end of this reach suffered a major washout area where the levee serves as a ramp just near the I-10 overpass. A photograph of this washout damage is shown in Figure NOE 19.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE25	3,230	13.80	L	H	NOE4

#### Reach NOE26 (IHNC DM)

This short reach of floodwall starts near the end of the washout area and extends just under the I-10 overpass. This section is considered a reach because it faces several different directions and contains two key points, both closure gates. There are no transition points assigned to this reach. The weighted average top elevation of this wall is as shown in the table below, and was based on a physical survey of the wall completed in 2006. This section was overtopped but received minimal scour damage behind the wall.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE26	1,640	13.80	W	H	NOE4

#### Reach NOE27 (IHNC DM)

This reach consists of a short transition levee between floodwalls. There are no key points within this short reach, but there are two transitions assigned to this reach where the floodwall interfaces with the levee. The weighted average top elevation of the levee is as shown in the table below, and was based upon a physical survey taken of this reach in 2006. This reach was overtopped during Katrina, but suffered no significant damage.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE27	2,750	13.80	L	H	NOE4





Figure NOE 18. Scour Damage around Gated Closure Along IHNC

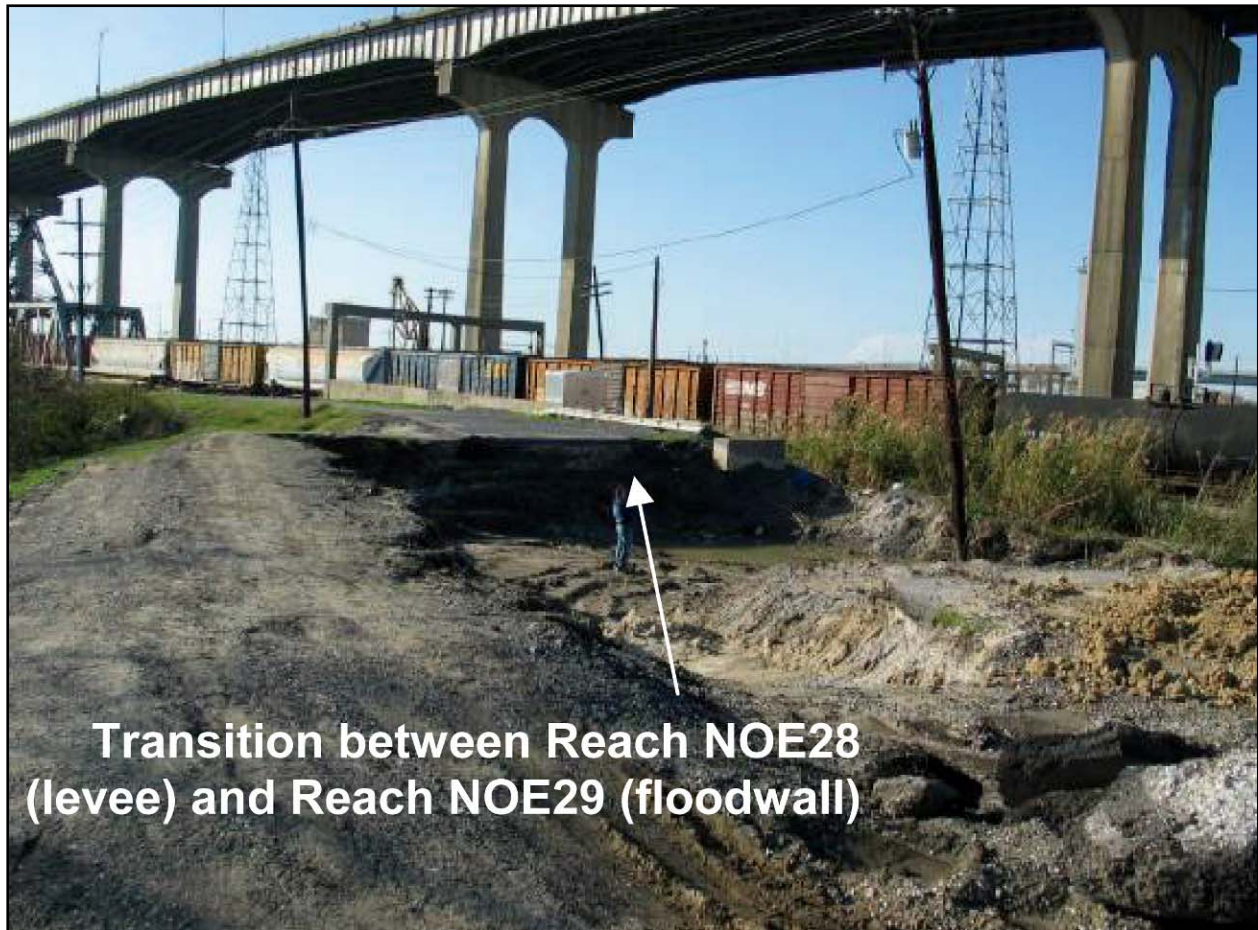


Figure NOE 19. Major Washout Area from Overtopping Near I-10 Overpass (Note: Located Along IHNC East Side)

### Reach NOE28 (IHNC DM)

This section of floodwall starts between the I-10 and Highway 90 overpasses and ends where it serves as the foundation for the Dupuy Storage Facility (see Figure NOE 20). There are no key points, but there is one transition point in this section, which is the old Highway 90 overpass location. It does not appear as if remedial repairs were made to this transition section when the overpass was relocated. The weighted average top elevation of this reach is as shown in the table below, and was based upon a physical survey taken during November 2005. This reach was overtopped with minimal damage during Katrina.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE28	4,100	12.00	L	H	NOE4



Figure NOE 20. Floodwall Serves as Building Foundation (Dupuy Storage Facility – IHNC East)

### Reach NOE29 (IHNC DM)

The last reach of the basin consists of floodwall. There are several key points (closure gates) within this reach. There is one transition within this reach at the Jourdan Road crossing. The weighted average top elevation of this reach is as shown in the table below, and was based upon a physical survey taken in November 2005. This includes the shorter sections of T-walls located around closure gates. Portions of this wall were overtopped as indicated by the erosion behind the floodwall adjacent to closure gate E-13 and shown in Figure NOE 21. This erosion, which measures approximately 8-ft wide by 2.5-ft deep, did not cause major structural problems for the wall at this location.

Reach	Length (ft)	Final 2005 (NAVD88 2004.65)	Reach Type	Foundation Material Type (H, C, P)	Subpolder Reference
NOE29	11,185	13.50	W	H	NOE5



Figure NOE 21. Erosion Behind Floodwall Adjacent to Gate E-13 (IHNC East)