

**CITY OF LUBBOCK, TEXAS**  
**MASTER DRAINAGE PLAN:**  
**2010 UPDATE**  
**SECTION 12**

**PLAYA SYSTEM N**

**12.1 GENERAL**

Playa System N encompasses approximately 713 acres of Master Drainage Plan: 2010 Update (2010 MDP Update) study area and 6,239 acres of areas previously studied under the 1998 Wolfforth Master Drainage Plan (1998 WMDP). Playa System N 2010 MDP Update study area lies south of 146<sup>th</sup> Street (CR 7500) to 162<sup>nd</sup> Street (CR 7600), between just west of Zeeland Avenue to just east of Research Blvd., while the 1998 WMDP area is located between 98<sup>th</sup> to 146<sup>th</sup> Street and between Heartland Avenue to Upland Avenue. The drainage patterns for System N area are generally from west to east.

Playa System N is comprised of six interdependent playa sub-systems, Sub-system N1 through Sub-System N6. Systems N1 through N5 are from the previously studied 1998 WMDP and System N6 is located in the current Master Drainage Plan: 2010 Update (2010 MDP Update) study areas. Within these sub-systems are 16 playa lakes (fourteen playa lakes from the 1998 WMDP and two in the 2010 MDP Update study area) and individual drainage sub-basins. Figure 12-1 illustrates the area of detailed study for Playa System N and the position of Playa System N relative to the City of Lubbock and the City's contour map coverage.

**12.2 WESTERN CONTRIBUTING AREAS**

System N contains areas that were studied under the 1998 WMDP as well as the 2010 MDP Update study areas. For the 1998 WMDP there were no apparent contributing western areas for Systems N1 through N5, see 1998 WMDP report for explanation. For System N6 (sub-basins N601 and N602) no areas to the west contribute runoff to these areas. The flow path for System N6 is from N601 to N602 and from N602 to N103 which is in the 1998 WMDP study area. Lake L454 (N602) does not overflow for either the 100-year or the 500-year 24-hour events, see Table 12-2 System N Playa Lake Runoff Volume Results in this section. Since re-evaluation of the water surface elevations for lakes that were mapped in the 1998 WMDP study was not included as part of the scope for this project and no additional contributing areas impact the 2010 MDP Update study areas, the HEC-HMS model for System N contains only the two sub-basins and lakes for the 2010 MDP Update study area.

**12.3 PLAYA LAKES**

System N contains 16 playa lakes, fourteen from the 1998 WMDP and two in the 2010 MDP Update study areas. Hydrologic and hydraulic parameters were developed for the two playas in the 2010 MDP Update study areas, exclusive of the lakes within the limits of the 1998 WMDP. Each

lake receives storm water runoff from an individual drainage subarea, or sub-basin. The drainage sub-basin designations and the designated playa lake associated with each are (1998 WMDP and 2010 MDP Update study areas): The lake numbers show in parentheses are numbers used in the 1998 WMDP.

	<u>Sub-basin I.D.</u>	<u>Lake I.D.</u>
Sub-system N1	N101	L463 (L352)
	N102	L461 (351A)
	N103	L453 (L354)
	N104	L452 (L353)
	N105	L451 (L350)
	N106	L181 (L181)
	N107	L448 (L181A)
	N108	L182A (L182A)
Sub-system N2	N201	L462 (L351)
Sub-system N3	N301	L134 (L300)
	N302	L465 (L301)
Sub-system N4	N401	L449 (L134C)
	N402	L182B (L182B)
Sub-system N5	N501	L184 (L184)
Sub-system N6	N601	L457
	N602	L454

Table 12-1 lists the hydrologic characteristics for predicted future developed condition for each studied sub-basin for both the 1998 WMDP lakes and the 2010 MDP Update study area. It can be seen in Table 12-1 that sub-basin drainage areas ranged from 90 acres to 1,017 acres. The listed acreages for the 2010 MDP Update study areas were converted to square miles for input into the HEC-HMS computer model for System N. The  $T_{LAG}$  listed for each sub-basin is 0.60 multiplied by the time of concentration in hours.  $T_{LAG}$  was the time parameter for each 2010 MDP Update study area sub-basin input into the HEC-HMS hydrologic model. The developed condition runoff curve number for the 2010 MDP Update study areas and the curve numbers used in the 1998 WMDP study are shown in Table 12-1 for each sub-basin along with the sub-basin area,  $T_{LAG}$ , and peak local runoff for both the 100-year 24-hour and 500-year 24-hour events completes the information for each sub-basin for which a runoff hydrograph was calculated.

Table 12-2 summarizes the primary results for each lake in the 2010 MDP Update study area modeled in System N and the updated information for the part of System N that was included in the 1998 WMDP. As noted in Section 1: Introduction to this plan, overflow lakes and non-overflow playa lakes were analyzed for only the natural storage capacity derived from one-foot contour maps for the lakes found in the 2010 MDP Update study area. See Section 1: Introduction for explanation of the analysis used for the overflow lakes in the 1998 WMDP. From those analyses, natural playa lake predicted water surface elevations were calculated for both the 100-year and 500-year 24-hour events in the 2010 MDP Update study area. Both the 100-year 24-hour and the 500-year 24-hour predicted water surface elevations are listed in Table 12-2 for lakes in the 2010 MDP Update study area and for the lakes studied in the 1998 WMDP. Playa lakes L182B (L182B), L449 (L134C), L457, L463 (L352) and L465 (L301) in System N exhibited overflow characteristics. Playa lake

L448 (L181A) was marginal overflow meaning that the predicted water surface elevation is less than 0.5 feet below the playa lake natural overflow crest elevation. The remaining playa lakes L134 (L300), L181 (L181), L182A (L182A), L184 (L184), L461 (L351A), L451 (L350), L452 (L353), L453 (L354), L462 (L351), and L454 are terminal lakes, that is that the playa lake has sufficient storage volume to totally contain the combined runoff from its sub-basin's initial condition runoff, its sub-basin's urbanized condition 500-year 24-hour runoff and the 500-year 24-hour overflow volume contributed to it from upstream playa lakes. The terminal lake is the end point of a system or "chain" of overflowing lakes.

## **12.4 OVERFLOW ROUTES**

For playa lakes in the 2010 MDP Update study area of System N that exhibit overflow characteristics, the overflow routes downstream from the overflowing playa lakes to the next downstream lakes were analyzed in HEC-RAS open channel water surface profile models for natural cross section channel conditions.

It can be seen in Table 12-2 that five lakes overflow for the predicted developed sub-basin conditions for the 100-year 24-hour storm event. The overflow route results Table AN-3 in Appendix A of section lists the upstream and downstream playa lakes that form the endpoints for the designated tributary reach, or overflow route. The natural playa peak discharge was used for the natural cross section water surface profile. Since the width of flow varied from cross section to cross section, a range of the water surface widths within the overflow route is listed for the applicable water surface profile.

## **12.5 SYSTEM N PLAN MAPS**

Figure 12-1 illustrates the detailed study area and sub-basins for System N relative to the City's map coverage. The plan maps which exhibit the results of the master drainage planning process are shown on Figures 12-2 through 12-11. The section numbers on Figures 12-2 through 12-11 refer to the City's aerial index map numbers.

END

**TABLE 12-1  
SYSTEM N SUB-BASIN CHARACTERISTICS**

Sub-Basin ID	Playa Lake ID	Sub-Basin Area (Acres)	Developed AMCII Runoff Curve Number	T <sub>LAG</sub> (Hours)	100-Year 24-Hour Peak Local Runoff (CFS)	500-Year 24-Hour Peak Local Runoff (CFS)
<b>Sub-System N1</b>						
N101	L463 (L352)	334	86.0	0.63	904	1,161
N102	L461 (L351A)	221	85.0	0.33	885	1,141
N103	L453 (L354)	269	88.0	0.36	1,067	1,355
N104	L452 (L353)	306	84.0	0.34	1,164	1,507
N105	L451 (L350)	565	83.0	0.62	1,458	1,896
N106	L181 (L181)	900	84.0	0.37	3,299	4,265
N107	L448 (L181A)	255	86.0	0.30	1,094	1,401
N108	L182A (L182A)	1,017	86.0	1.16	1,797	2,309
<b>Sub-System N2</b>						
N201	L462 (L351)	378	84.0	0.29	1,582	2,044
<b>Sub-System N3</b>						
N301	L134 (L300)	601	85.0	0.34	2,323	2,995
N302	L465 (L301)	536	83.0	0.31	2,128	2,765
<b>Sub-System N4</b>						
N401	L449 (L134C)	90	82.0	0.21	422	549
N402	L182B (L182B)	338	84.0	0.52	1,003	1,297
<b>Sub-System N5</b>						
N501	L184 (L184)	429	84.0	0.48	1,339	1,734
<b>Sub-System N6</b>						
N601	L457	174	84.0	0.29	738	953
N602	L454	538	84.0	0.88	1,118	1,352

All lakes in System N with the exception of L454 & L457 were studied under the 1998 WMDP.

Lakes 454 & L457 were studied under the 2010 MDP Update.

( ) indicate lake numbers used in the 1998 WMDP, the other numbers are lake numbers used by the City of Lubbock.

NA - Results not available, analysis not performed in prior studies

**TABLE 12-2  
SYSTEM N PLAYA LAKE RESULTS**

Sub-Basin ID	Playa Lake ID	Playa Lake Type	Natural Lake Overflow Elevation (NAVD 88)	100-Year Natural PWSEL (NAVD 88)	100-Year Reclaimed PWSEL (NAVD 88)	500-Year Natural PWSEL (NAVD 88)	100-Year Natural Peak Discharge (CFS)	100-Year Reclaimed Peak Discharge (CFS)	500-Year Natural Peak Discharge (CFS)	Downstream Receiving Playa Lake
<b>Sub-System N1</b>										
N101	L463 (L352)	Overflow	3316.8	3317.6	3318.3	3317.7	796	872	1,053	L461 (L351A)
N102	L461 (L351A)	True	3304.7	3305.6	NA	3305.9*	772	842	1,013*	L462 (L351)
N103	L453 (L354)	True	3301.4	3299.1	NA	3299.8	0	0	0	L452 (L353)
N104	L452 (L353)	True	3299.0	3292.3	NA	3293.0	0	0	0	L451 (L350)
N105	L451 (L350)	True	3299.0	3285.6	NA	3286.5	0	0	0	L181 (L181)
N106	L181 (L181)	True	3295.2	3289.4	NA	3290.5	0	0	0	L448 (L181A)
N107	L448 (L181A)	Marginal	3294.5	3294.0	NA	3294.6	0	0	0	L182A (L182A)
N108	L182A (L182A)	True	3287.4	3284.0	NA	3285.3	0	0	0	END
<b>Sub-System N2</b>										
N201	L462 (L351)	True	3304.7	3304.3	NA	3304.9*	0	0	0*	L461 (L351A)
<b>Sub-System N3</b>										
N301	L134 (L300)	True	3314.3	3298.7	NA	3300.3	0	0	0	L465 (L301)
N302	L465 (L301)	Overflow	3314.3	3314.5	3314.5	3314.7	54	58	173	L134 (L300)
<b>Sub-System N4</b>										
N401	L449 (L134C)	Overflow	3304.3	3304.4	3304.4	3304.5	56	65	176	L182B (L182B)
N402	L182B (L182B)	Overflow	3296.1	3297.1	3297.1	3297.7	910	996	1,330	L182A (L182A)
<b>Sub-System N5</b>										
N501	L184 (L184)	True	3291.5	3288.1	NA	3288.8	0	0	0	END
<b>Sub-System N6</b>										
N601	L457	Overflow	3307.1	3307.3	NA	3307.4	585	NA	756	L454
N602	L454	True	3300.0	3295.6	NA	3296.5	0	NA	0	L453 (L354)

PWSEL = Predicted Water Surface Elevation.

All lakes in System N with the exception of L454 & L457 were studied under the 1998 WMDP. Lakes 454 & L457 were studied under the 2010 MDP Update.

Natural Overflow Elevations and Natural Predicted Water Surface Elevation for all lakes in System N with the exception of L454 & L457 were converted from NGVD 29 vertical datum to NAVD 88 by the conversion factor +1.26'. Lakes L454 & L457 were studied under the 2010 MDP Update and the elevations shown are based on 1988 NAVD contours.

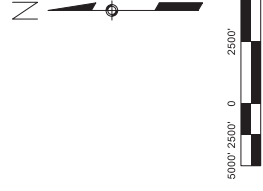
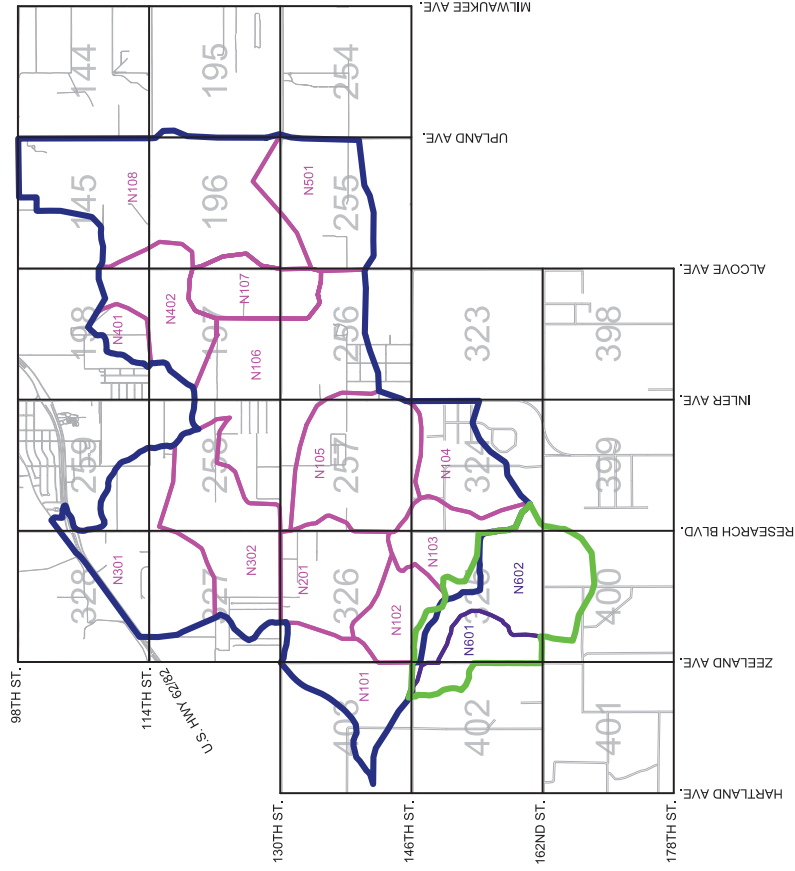
NA - Results not available, analysis not performed in prior studies.

( ) indicate lake numbers used in the 1998 WMDP, the other numbers are lake numbers used by the City of Lubbock.

\* An error was found in the way these lakes were modeled for the 500-yr event in the 1998 WMDP. Results shown are from the updated model, see Syst\_N.HMS.

Playa Lake Type Refers To: True Non-Overflow, Marginal Non-Overflow, Overflow Classifications in the City of Lubbock Drainage Criteria Manual

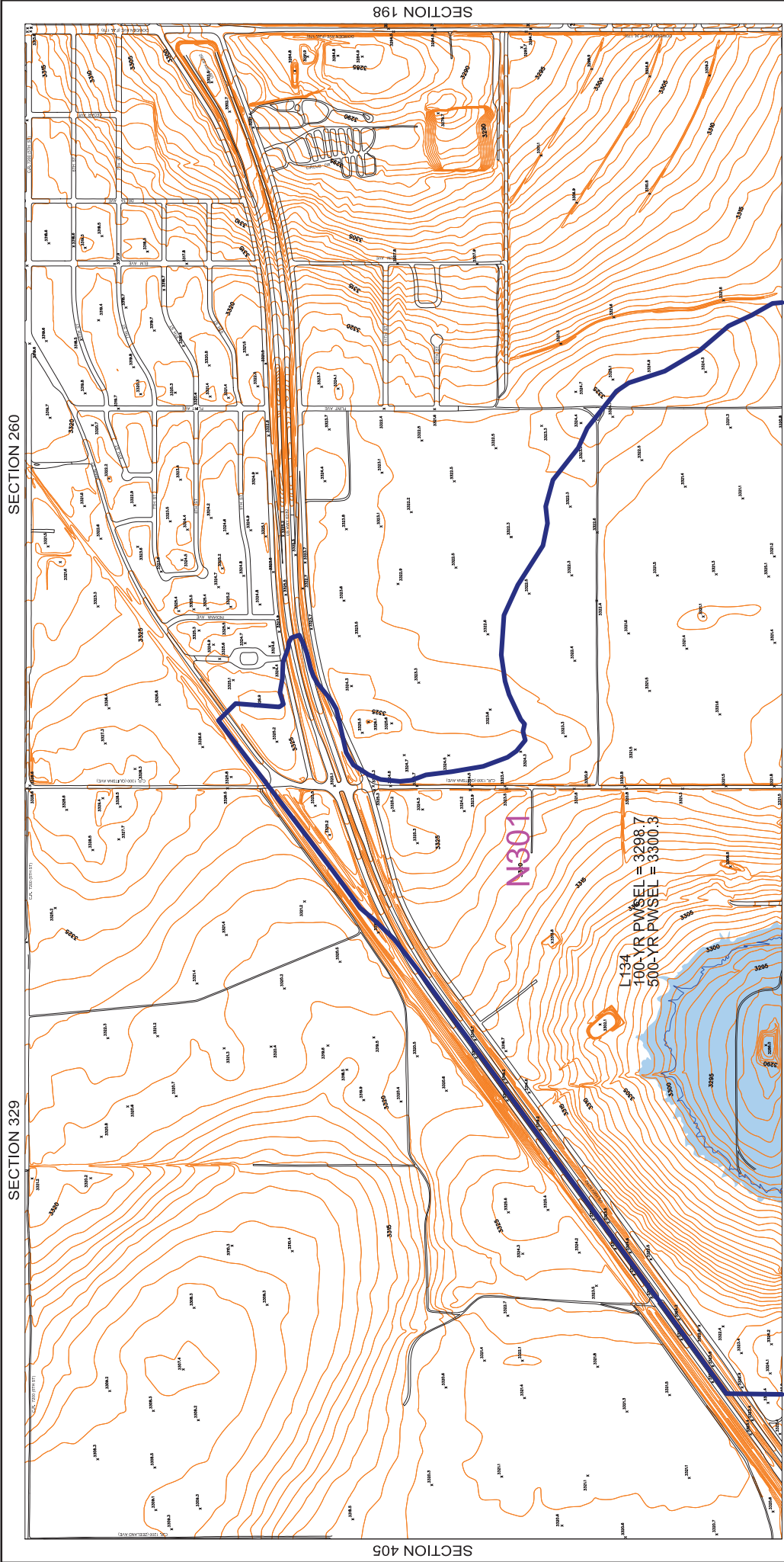
# PLAYA SYSTEM N



**LEGEND**

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	Study Area Limits 1988 MDP*		Sub-Basin Limits 1988 MDP*
	N103 Sub-Basin ID 1988 MDP		N601 Sub-Basin ID 2010 MDP

\*REFERS TO CITY OF WOLFORTH 1988 MDP



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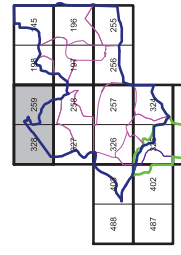
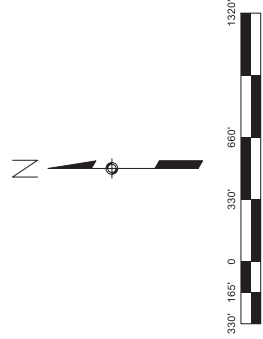
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**PSC**  
 CITY OF LUBBOCK, TEXAS  
 MASTER DRAINAGE PLAN  
 JULY 2010  
 SYSTEM N  
 FIGURE 12-2  
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**LEGEND**

- Study Area Limits 1998 MDP
- Study Area Limits 2010 MDP
- Sub-Basin Limits 1998 MDP
- Sub-Basin Limits 2010 MDP
- N801 Sub-Basin ID
- Overflow Route Profile
- Cross Section Location
- Water Surface Contour
- Initial Lake Surface
- 100-YR Natural Lake/Channel Overflow Limits
- 100-YR Reclaimed System Lake/Channel Overflow Limits



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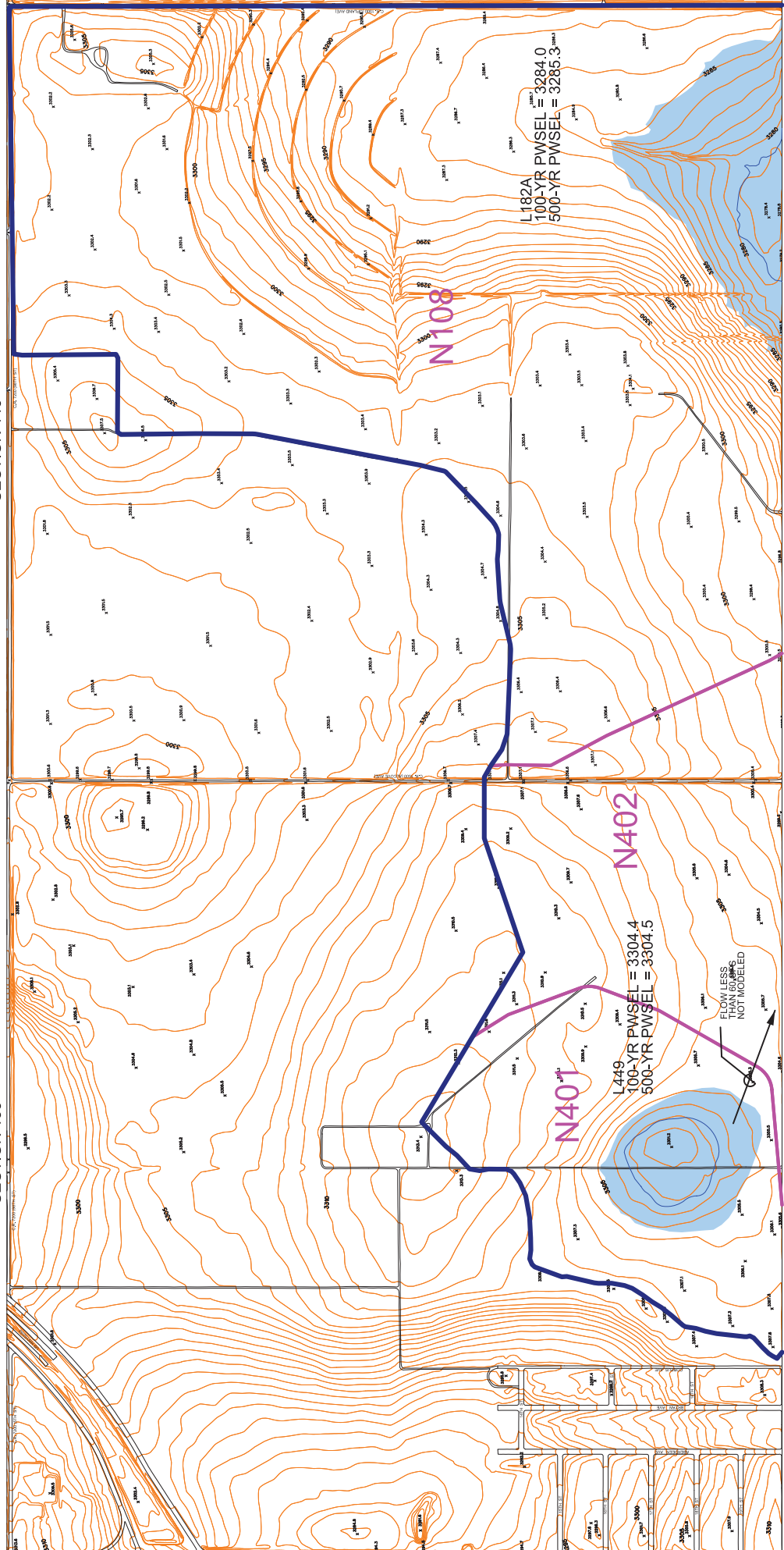
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SECTION 199

SECTION 259

SECTION 144

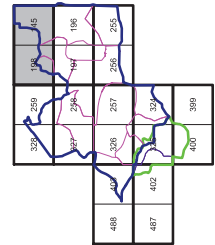
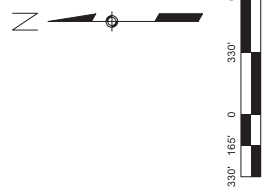


L1182A  
 100-YR PWSEL = 3284.0  
 500-YR PWSEL = 3286.3

L449  
 100-YR PWSEL = 3304.4  
 500-YR PWSEL = 3304.5

**LEGEND**

- Study Area Limits 1998 MDP
- Study Area Limits 2010 MDP
- Sub-Basin Limits 1998 MDP
- Sub-Basin Limits 2010 MDP
- N801 Sub-Basin ID
- Overflow Route Profile
- Cross Section Location
- Water Surface Contour
- Initial Lake Surface
- 100-YR Natural Lake/Channel Overflow Limits
- 100-YR Reclaimed System Lake Channel Overflow Limits



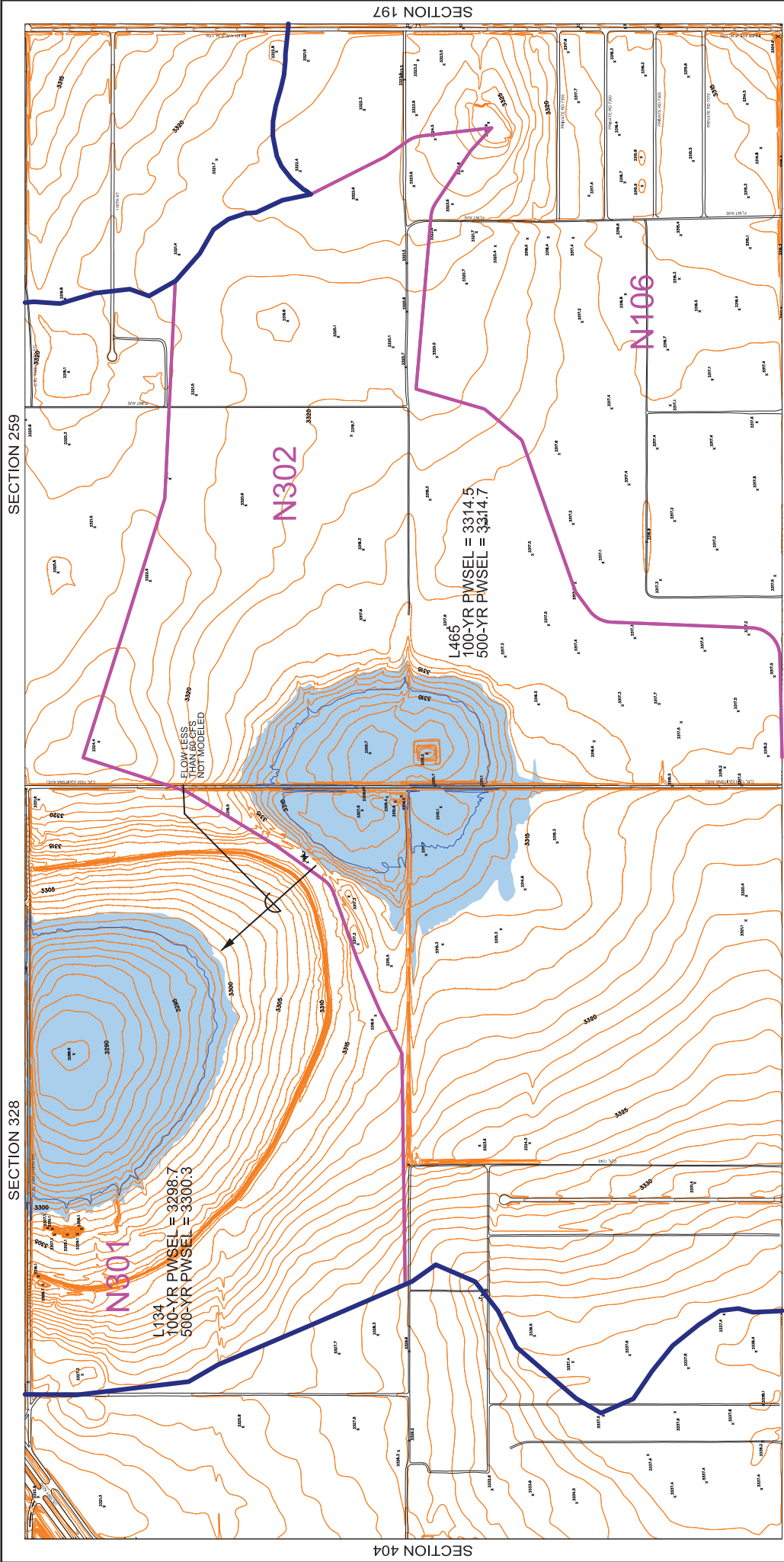
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 MASTER DRAINAGE PLAN

JULY 2010  
 SYSTEM N  
 FIGURE 12-3  
 SECTIONS 198 & 145

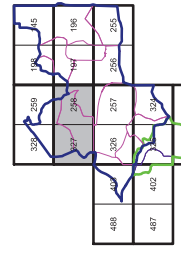
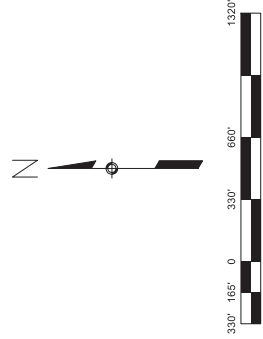
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**LEGEND**

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	Study Area Limits 2010 MDP		Cross Section Location
	Sub-Basin Limits 1998 MDP		Water Surface Contour
	Sub-Basin Limits 2010 MDP		Initial Lake Surface
	N801 Sub-Basin ID		100-YR Natural Lake/Channel Overflow Limits
			100-YR Reclaimed System Overflow Limits



SECTION 328

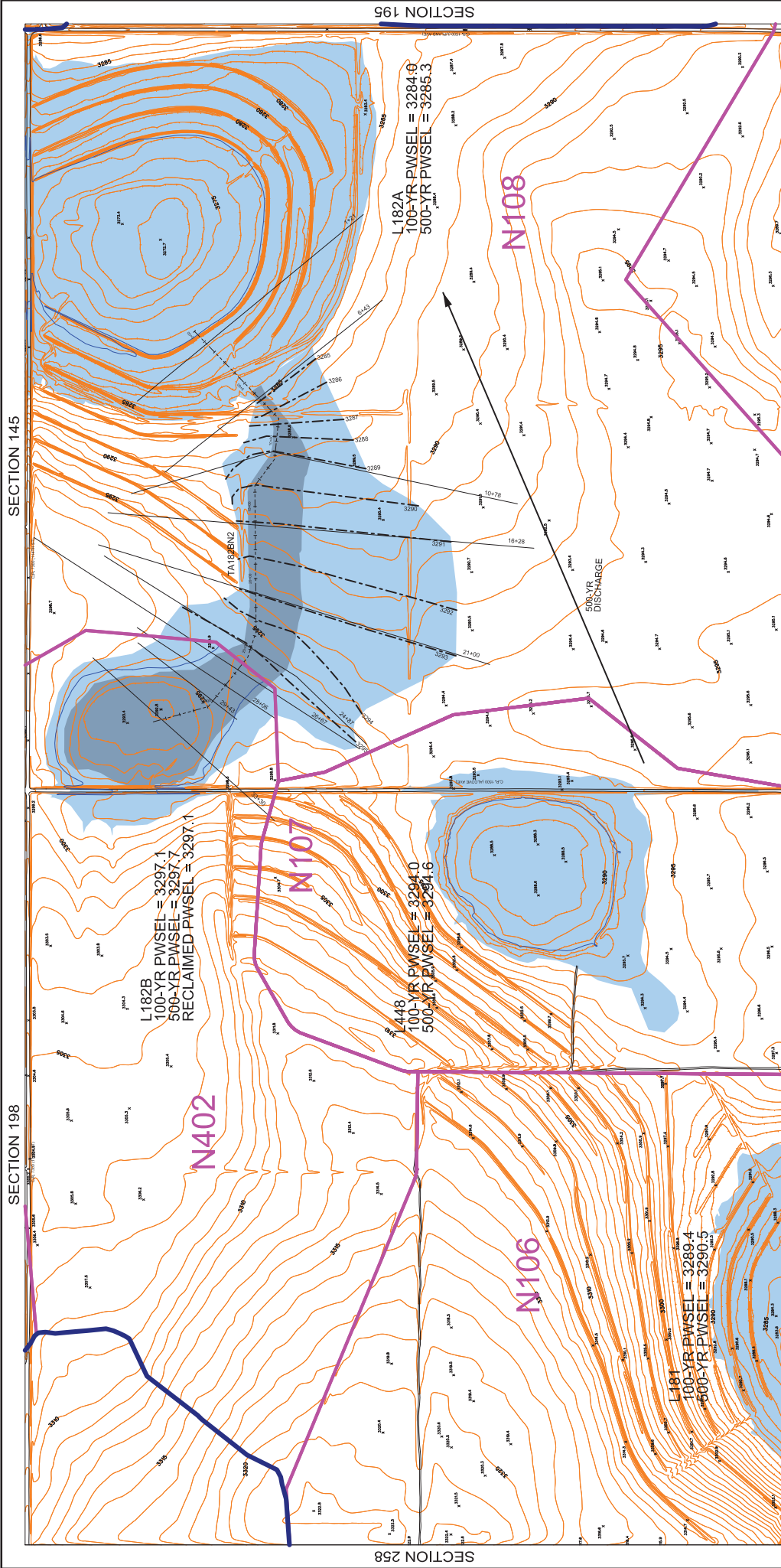
SECTION 259

SECTION 404

SECTION 197

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SECTION 257



SECTION 145

SECTION 198

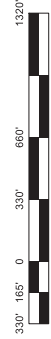
SECTION 258

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**LEGEND**

	Study Area Limits 1998 MDP		Overflow Route Profile
	Study Area Limits 2010 MDP		Cross Section Location
	Sub-Basin Limits 1998 MDP		Water Surface Contour
	Sub-Basin Limits 2010 MDP		Initial Lake Surface
	N801 Sub-Basin ID		100-YR Natural Lake/Channel Overflow Limits
			100-YR Reclaimed System Lake/Channel Overflow Limits

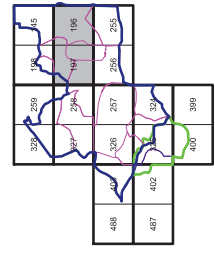


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 MASTER DRAINAGE PLAN

JULY 2010  
 SYSTEM N  
 FIGURE 12-5  
 SECTIONS 197 & 196

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SECTION 195

SECTION 258

N108

N107

N106

N402

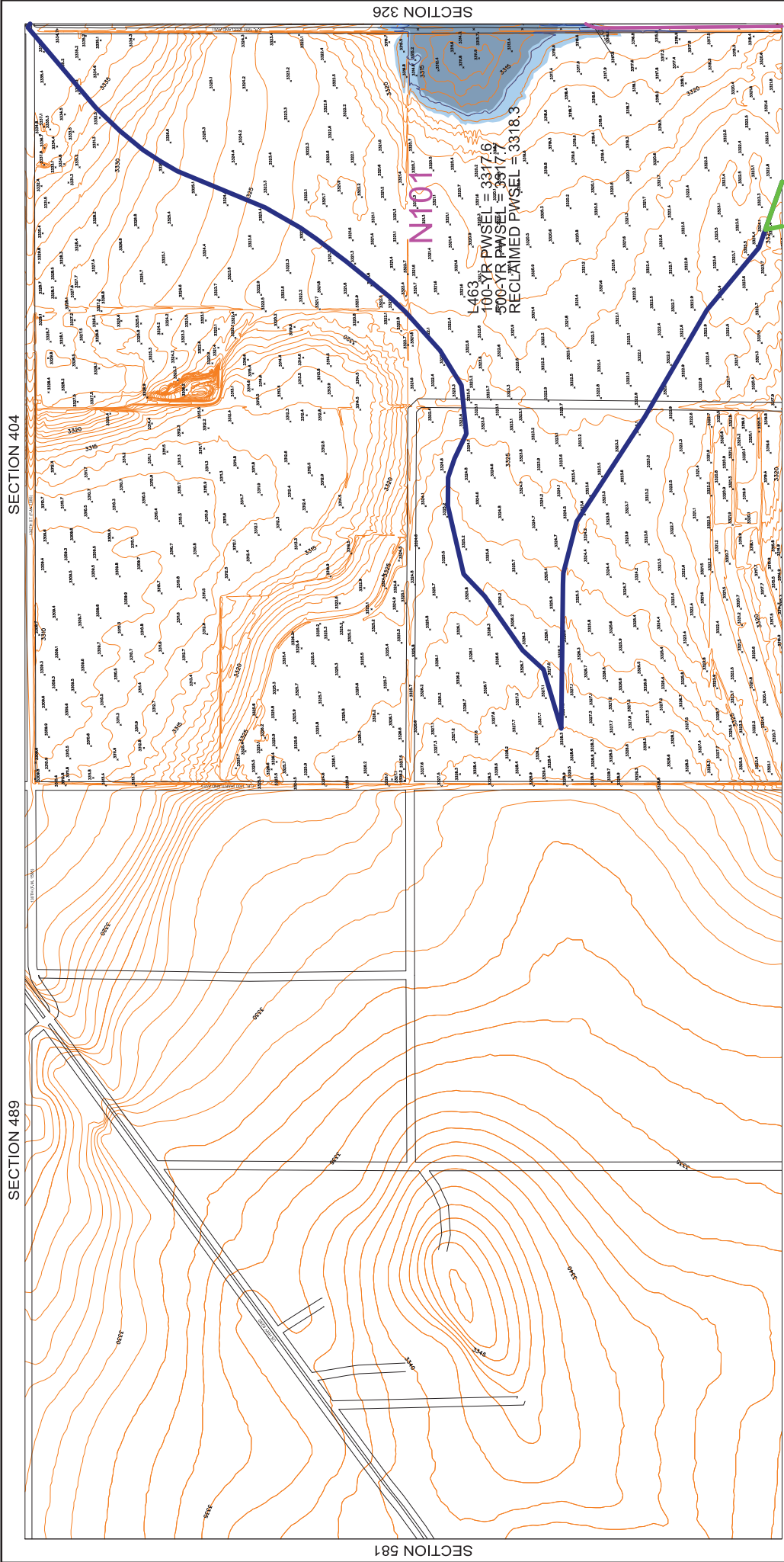
L182B  
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 500-YR PWSEL = 3297.7  
 RECLAIMED PWSEL = 3297.1

L1448  
 100-YR PWSEL = 3294.0  
 500-YR PWSEL = 3294.6

L181  
 100-YR PWSEL = 3289.4  
 500-YR PWSEL = 3290.5

L182A  
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 500-YR PWSEL = 3285.3

50-YR DISCHARGE



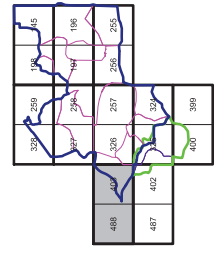
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	Study Area Limits 1998 MDP		Overflow Route Profile
	Study Area Limits 2010 MDP		Cross Section Location
	Sub-Basin Limits 1998 MDP		Water Surface Contour
	Sub-Basin Limits 2010 MDP		Initial Lake Surface
	N801 Sub-Basin ID		100-YR Natural Lake/Channel Overflow Limits
			100-YR Reclaimed System Overflow Limits

**CITY OF LUBBOCK, TEXAS**  
**MASTER DRAINAGE PLAN**  
 JULY 2010  
 SYSTEM N  
 FIGURE 12-6  
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SECTION 404

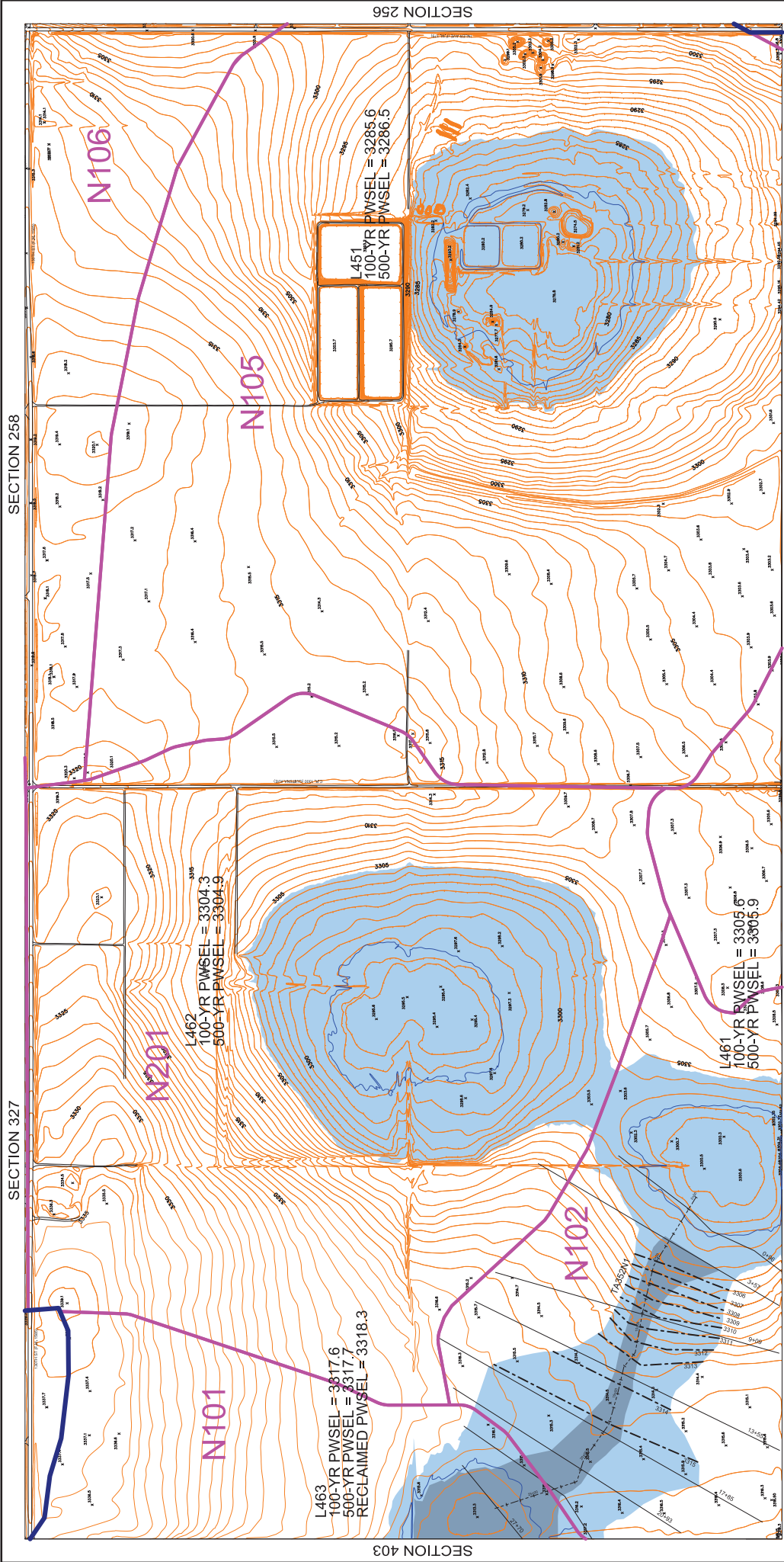
SECTION 489

SECTION 402

SECTION 487

SECTION 326

SECTION 581



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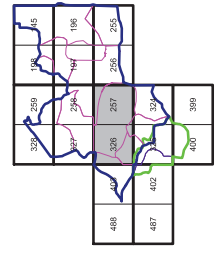
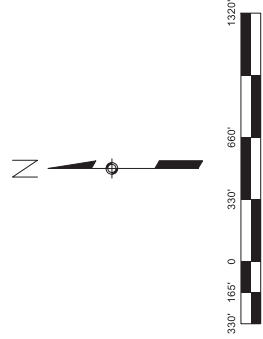
CITY OF LUBBOCK, TEXAS  
MASTER DRAINAGE PLAN

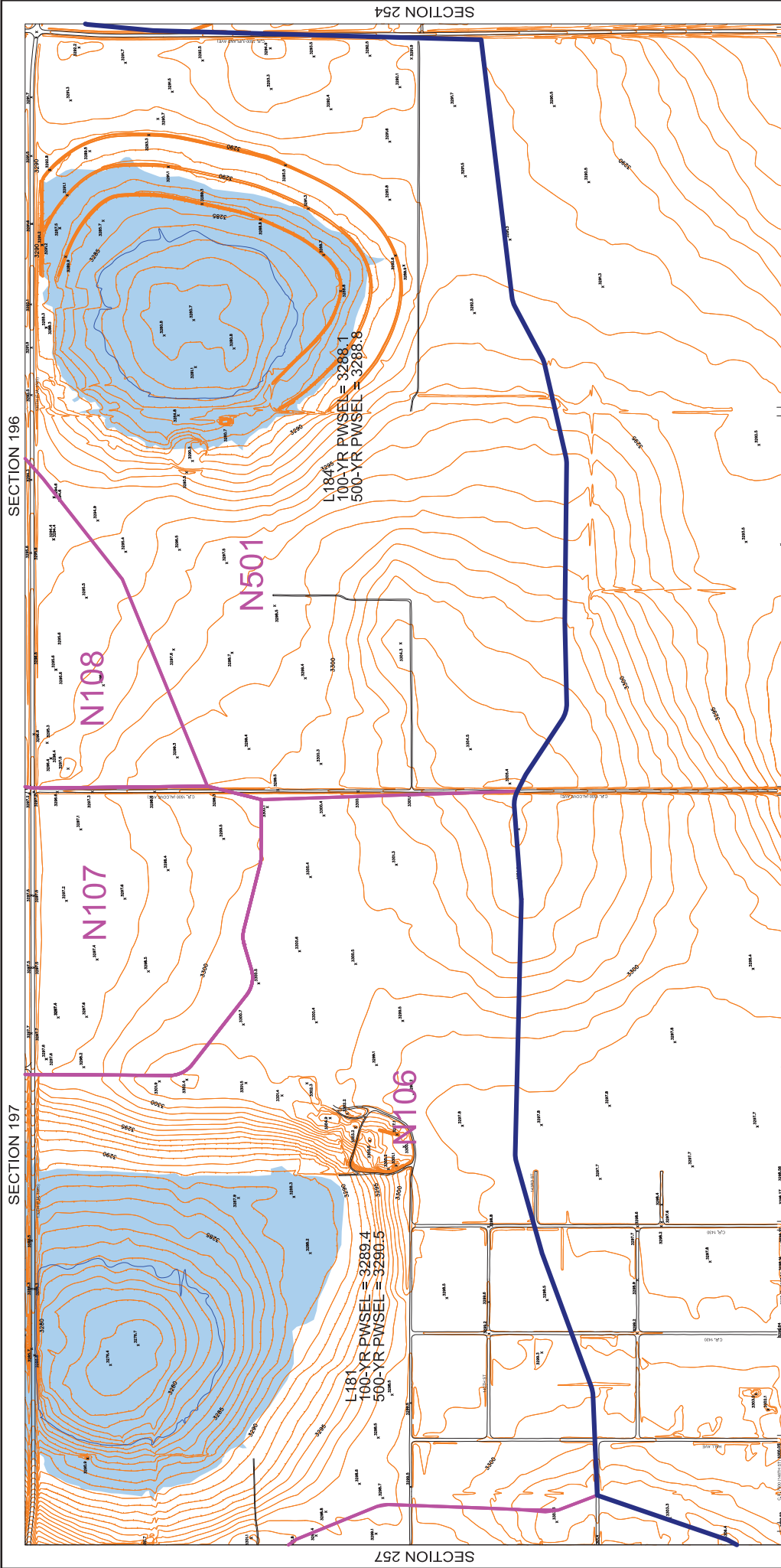
JULY 2010  
SYSTEM N  
FIGURE 12-7  
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**LEGEND**

- Study Area Limits 1998 MDP
- Study Area Limits 2010 MDP
- Sub-Basin Limits 1998 MDP
- Sub-Basin Limits 2010 MDP
- N801 Sub-Basin ID
- Overflow Route Profile
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- 100-YR Reclaimed System Lake/Channel Overflow Limits





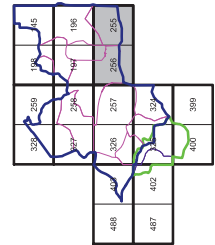
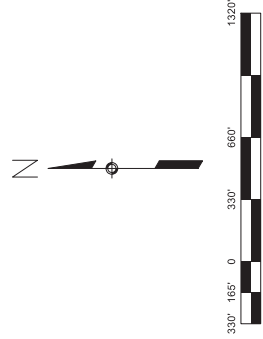
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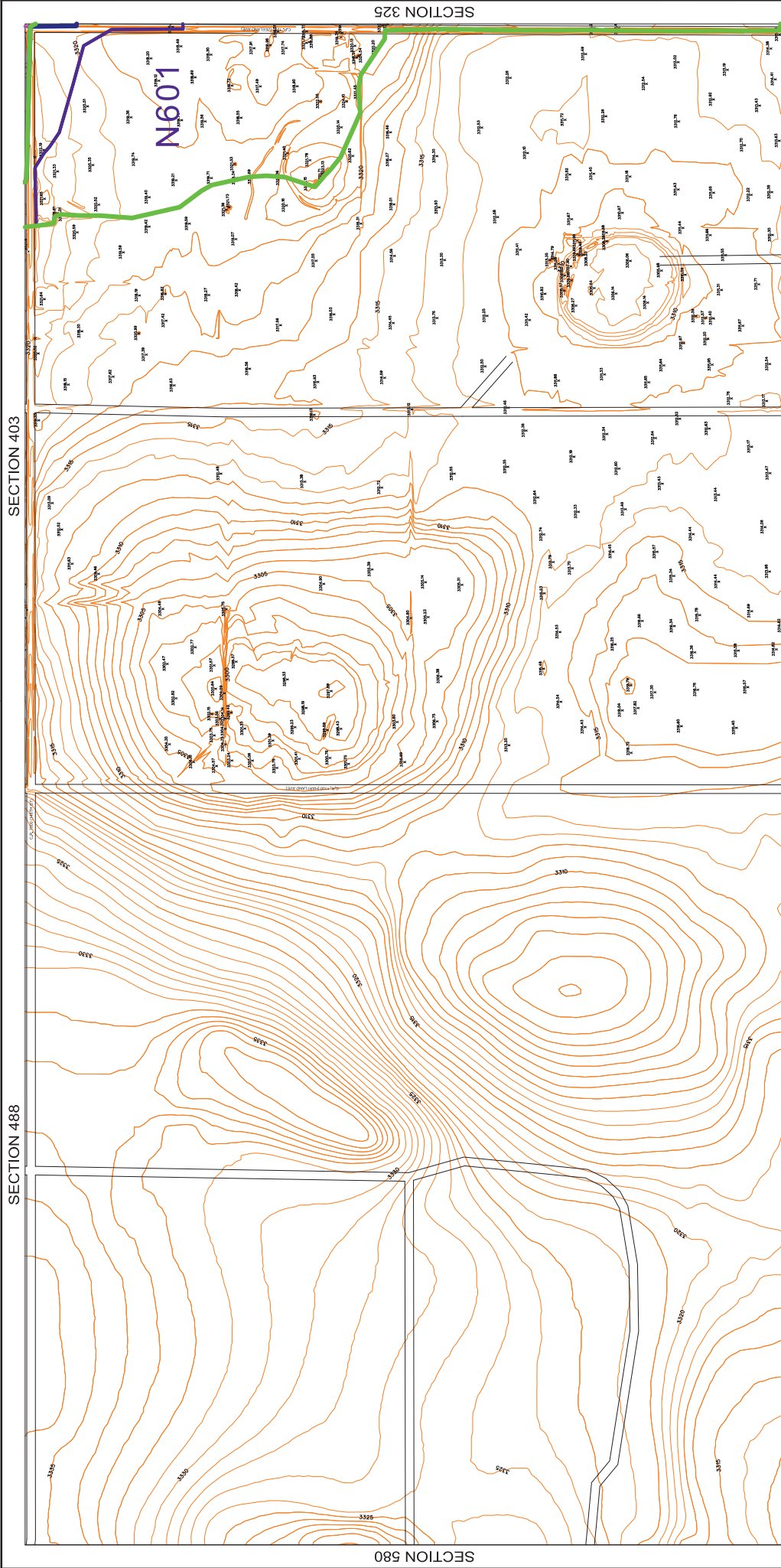
CITY OF LUBBOCK, TEXAS  
MASTER DRAINAGE PLAN  
JULY 2010  
SYSTEM N  
FIGURE 12-8  
SECTIONS 256 & 255

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**LEGEND**

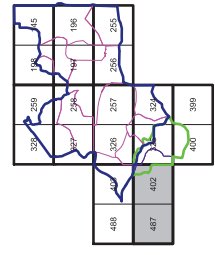
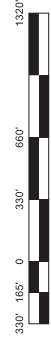
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Study Area Limits 2010 MDP	Cross Section Location
Sub-Basin Limits 1998 MDP	Water Surface Contour
Sub-Basin Limits 2010 MDP	Initial Lake Surface
N801 Sub-Basin ID	100-YR Natural Lake/Channel Overflow Limits
	100-YR Reclaimed System Lake/Channel Overflow Limits





**LEGEND**

- Study Area Limits 1998 MDP
- Study Area Limits 2010 MDP
- Sub-Basin Limits 1998 MDP
- Sub-Basin Limits 2010 MDP
- N601 Sub-Basin ID
- Overflow Route Profile
- Cross Section Location
- Water Surface Contour
- Initial Lake Surface
- 100-YR Natural Lake/Channel Overflow Limits
- 100-YR Reclaimed System Lake/Channel Overflow Limits



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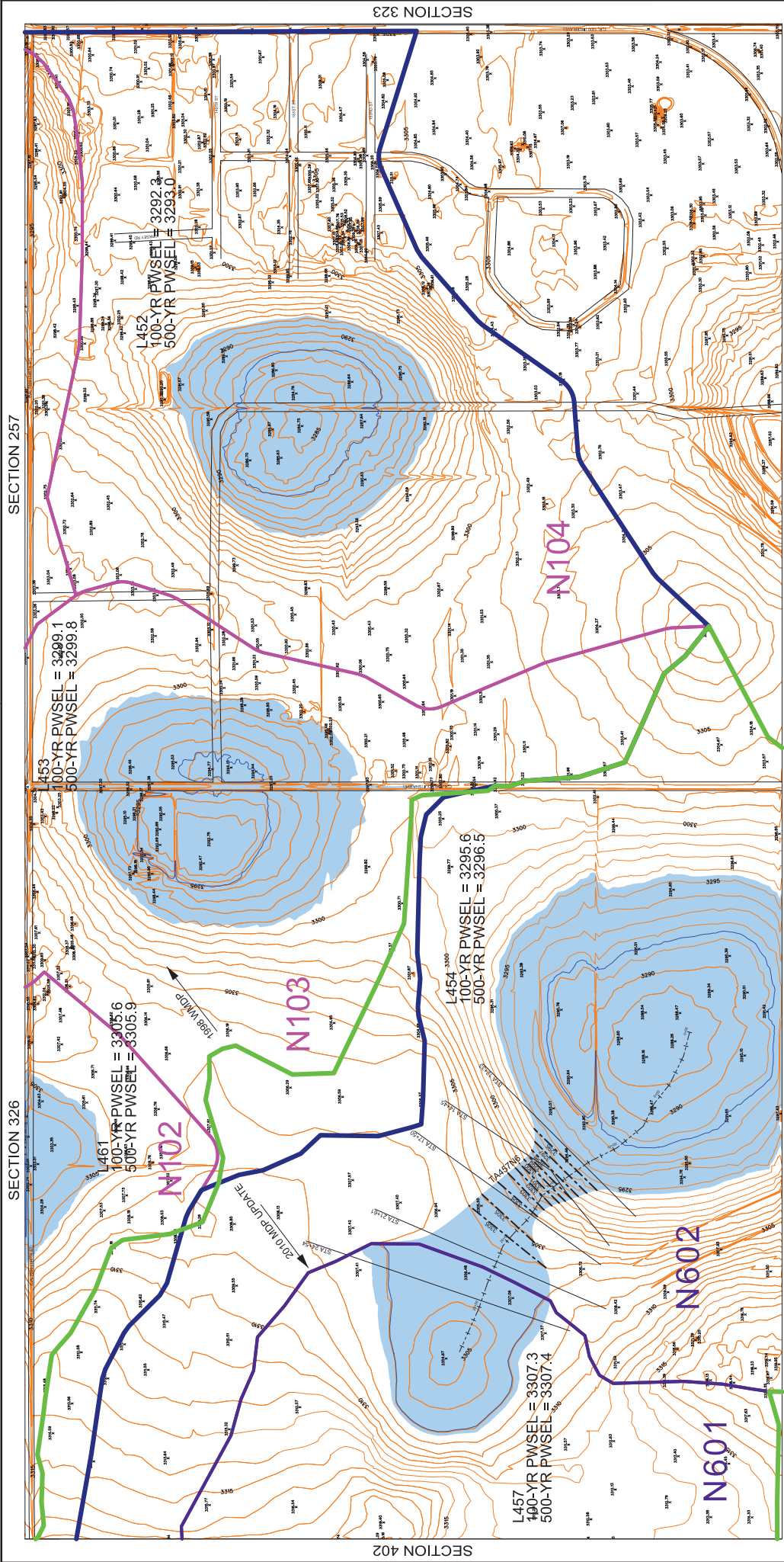
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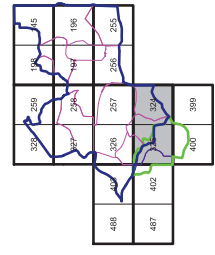
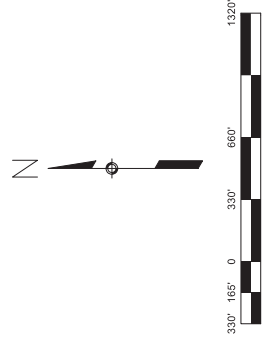
SECTION 325

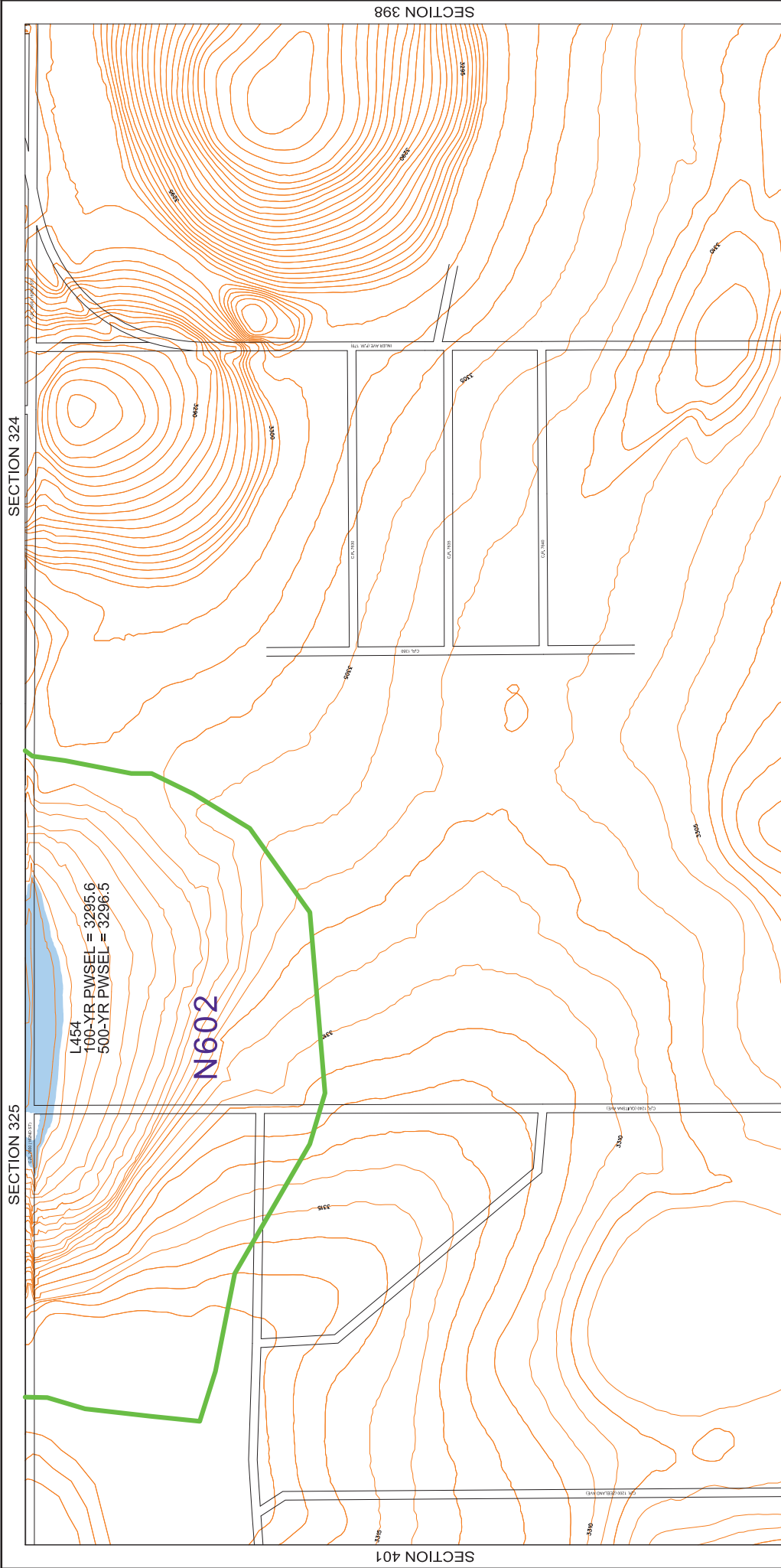
SECTION 580



**LEGEND**

- Study Area Limits 1998 MDP
- Study Area Limits 2010 MDP
- Sub-Basin Limits 1998 MDP
- Sub-Basin Limits 2010 MDP
- N601 Sub-Basin ID
- Overflow Route Profile
- Cross Section Location
- Water Surface Contour
- Initial Lake Surface
- 100-YR Natural Lake/Channel Overflow Limits
- 100-YR Reclaimed System Lake/Channel Overflow Limits



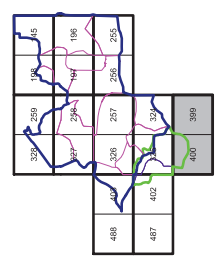
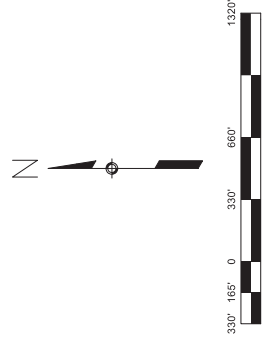


L454  
 100-YR PWSEL = 3295.6  
 500-YR PWSEL = 3296.5

N602

**LEGEND**

- Study Area Limits 1998 MDP
- Study Area Limits 2010 MDP
- Sub-Basin Limits 1998 MDP
- Sub-Basin Limits 2010 MDP
- N601 Sub-Basin ID
- Overflow Route Profile
- Cross Section Location
- Water Surface Contour
- Initial Lake Surface
- 100-YR Natural Lake/Channel Overflow Limits
- 100-YR Reclaimed Lake/Channel Overflow Limits





## **APPENDIX A FOR SYSTEM N**

**TABLE AN-1  
SYSTEM N RUNOFF CHARACTERISTICS**

Sub-Basin ID	Lake ID	Sub-Basin Area (Acres)	Developed AMCH Runoff Curve Number	Time of Concentration (Hours)	T <sub>LAG</sub> (Hours)	100-Year 24-Hour Rainfall Depth (Inches)	100-Year 24-Hour Runoff Depth (Inches)	500-Year 24-Hour Rainfall Depth (Inches)	500-Year 24-Hour Runoff Depth (Inches)	Peak Inflow to Lake (CFS)
<b>Sub-System N1</b>										
N101	L463 (L352)	334	86.0	1.05	0.63	6.80	5.17	8.38	6.70	904
N102	L461 (L351A)	221	85.0	0.55	0.33	6.80	5.06	8.38	6.58	950
N103	L453 (L354)	269	88.0	0.60	0.36	6.80	5.40	8.38	6.94	1067
N104	L452 (L353)	306	84.0	0.57	0.34	6.80	4.95	8.38	6.46	1164
N105	L451 (L350)	565	83.0	1.03	0.62	6.80	4.84	8.38	6.34	1458
N106	L181 (L181)	900	84.0	0.62	0.37	6.80	4.95	8.38	6.46	3299
N107	L448 (L181A)	255	86.0	0.50	0.30	6.80	5.17	8.38	6.70	1094
N108	L182A (L182A)	1,017	86.0	1.93	1.16	6.80	5.17	8.38	6.70	2610
<b>Sub-System N2</b>										
N201	L462 (L351)	378	84.0	0.48	0.29	6.80	4.95	8.38	6.46	1582
<b>Sub-System N3</b>										
N301	L134 (L300)	601	85.0	0.57	0.34	6.80	5.06	8.38	6.58	2323
N302	L465 (L301)	536	83.0	0.52	0.31	6.80	4.84	8.38	6.34	2128
<b>Sub-System N4</b>										
N401	L449 (L134C)	90	82.0	0.35	0.21	6.80	4.73	8.38	6.22	422
N402	L182B (L182B)	338	84.0	0.87	0.52	6.80	4.95	8.38	6.46	1016
<b>Sub-System N5</b>										
N501	L184 (L184)	429	84.0	0.80	0.48	6.80	4.95	8.38	6.46	1339
<b>Sub-System N6</b>										
N601	L457	174	84.0	0.48	0.29	6.80	4.95	8.38	6.46	738
N602	L454	538	84.0	1.62	0.97	6.80	4.95	8.38	6.46	1554

All lakes in System N with the exception of L454 & L457 were studied under the 1998 WMDP. Lakes 454 & L457 were studied under the 2010 MDP Update.

( ) indicate lake numbers used in the 1998 WMDP, the other numbers are lake numbers used by the City of Lubbock.

**TABLE AN-2  
SYSTEM N PLAYA LAKE RUNOFF VOLUME RESULTS**

Sub-Basin ID	Lake ID	Natural Overflow Elevation (NAVD 88)	Natural Storage to Natural Overflow Elevation (Ac. Ft.)	Initial Condition Runoff Volume (Ac. Ft)	Lake Full to Overflow at Initial Condition (Yes/No)	100-year, 24-hour Runoff Volume (Ac. Ft.)	Total Runoff (Ac. Ft.)	True Non-Overflow, Marginal Non-Overflow, or Overflow	Natural Lake Predicted Water Surface Elevation (NAVD88)	Reclaimed Lake Predicted Water Surface Elevation (NAVD88)	Overflow Volume (Ac. Ft.)	Downstream Receiving Lake
<b>Sub-System N1</b>												
N101	L463 (L352)	3316.8	40.3	38.7	No	144.0	182.7	Overflow	3317.6	3318.3	142.4	L461 (L351A)
N102	L461 (L351A)	3304.7	62.2	25.8	No	93.2	119.0	True	3305.6	NA	0.0	L462 (L351)
N103	L453 (L354)	3301.4	378.6	31.4	No	121.0	152.4	True	3299.1	NA	0.0	L452 (L353)
N104	L452 (L353)	3299.0	647.6	35.7	No	126.2	161.9	True	3292.3	NA	0.0	L451 (L350)
N105	L451 (L350)	3299.0	2074.6	65.9	No	227.9	293.8	True	3285.6	NA	0.0	L181 (L181)
N106	L181 (L181)	3295.2	1277.6	105.0	No	371.3	476.3	True	3289.4	NA	0.0	L448 (L181A)
N107	L448 (L181A)	3294.5	163.6	29.8	No	109.9	139.7	Marginal	3294.0	NA	0.0	L182A (L182A)
N108	L182A (L182A)	3287.4	1303.5	10.5	No	438.5	449.0	True	3284.0	NA	0.0	L094B (Sys. G)
<b>Sub-System N2</b>												
N201	L462 (L351)	3304.7	437.5	44.1	No	155.9	200.0	True	3304.2	NA	0.0	L461 (L351A)
<b>Sub-System N3</b>												
N301	L134 (L300)	3314.3	2758.0	70.1	No	253.5	323.6	True	3298.7	NA	0.0	L465 (L301)
N302	L465 (L301)	3314.3	239.1	62.5	No	216.2	278.7	Overflow	3314.5	3314.5	39.6	L134 (L300)
<b>Sub-System N4</b>												
N401	L449 (L134C)	3304.3	29.8	10.5	No	35.5	46.0	Overflow	3304.36	3304.4	16.2	L182B (L182B)
N402	L182B (L182B)	3296.1	39.1	39.4	Yes*	139.4	178.8	Overflow	3297.06	3297.11	139.7	L182A (L182A)
<b>Sub-System N5</b>												
N501	L184 (L184)	3291.5	557.5	50.1	No	177.0	227.1	True	3288.06	NA	0.0	L185 (Sys. G)
<b>Sub-System N6</b>												
N601	L457	3307.1	22.6	20.3	No	71.8	92.1	Overflow	3307.33	NA	69.5	L454
N602	L454	3300.0	941.8	62.8	No	222.1	284.9	True	3295.6	NA	0.0	L453 (L354)

\* If initial condition runoff volume exceeded playa storage capacity, then the playa lake was considered as simply being full at the beginning of the 100-year storm event. The volume of initial condition runoff in excess of playa lake storage volume was discarded. Therefore, 100 percent of the 100-year 24-hour runoff volume overflowed to the next downstream playa lake.

NA - Results not available, analysis not performed in prior studies.

( ) indicate lake numbers used in the 1998 WMDP, the other numbers are lake numbers used by the City of Lubbock.

**TABLE AN-3  
OVERFLOW ROUTE RESULTS**

Upstream Playa Lake ID	Downstream Playa Lake ID	Tributary Reach ID (Overflow Route)	Natural Playa Peak Discharge 100-year 24-hour (CFS)	Natural Cross Section Flow Width Range (Feet)	Reclaimed Playa Peak Discharge 100-year 24-hour (CFS)	Effective Flow Analysis Width Range (Feet)
L134C	L182B	N.M.	55	N.M.	65	N.M.
L182B	L182A	TA182BN2	910	547-1,618	995	100-470
L301	L300	N.M.	55	N.M.	60	N.M.
L352	L351A	TA352N1	795	665-1,206	875	152-412
L457	L454	TA457N6	585	382-1,268	NA	NA

N.M. = Not Meaningful, therefore not mapped. Insufficient detail for cross-sections to define HEC-2 models (from 1998 WMDP).

NA - Results not available, analysis not performed in prior studies.