

Seminole County, Florida

Lake Jesup Basin Engineering Study and Drainage Inventory

Lake Onora/Silver Lake Model Update Letter Report (October 2004)

Background

In December 2001, CDM completed the Lake Jesup Basin Engineering Study and Drainage Inventory (2001 Study) for the Seminole County, Florida Road Operations and Stormwater Division (County). The purpose of this three-phased study (i.e., system inventory, engineering analysis, and deficiency correction program) was to address existing and predicted flooding problems resulting from development and future land use conditions (built-out) within the basin as well as prioritizing the major subbasins for water quality retrofit. Since the completion of the 2001 Study, substantial development and changes to the primary stormwater management system (PSMS) have occurred in Subbasin 05-03 of the Lake Jesup Basin (shown in **Figure 1**).

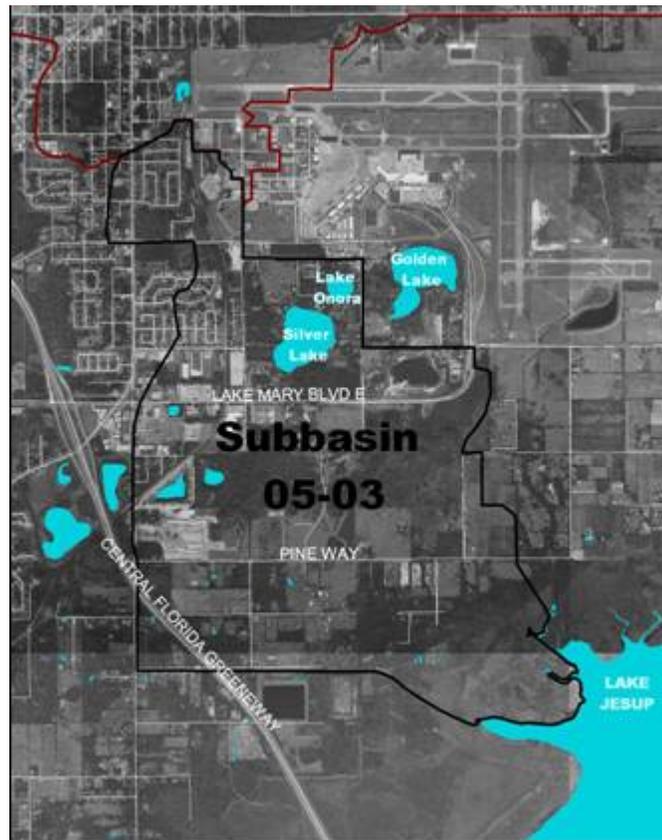


Figure 1 - Subbasin 05-03, Lake Jesup Basin, Seminole County, FL

As part of the 2001 Study, CDM developed a stormwater model to simulate the hydrologic and hydraulic conditions of the PSMS within the Lake Jesup Basin using the Advanced Interconnected Pond Routing Model (adICPR®) Version 2.2. The purpose of this work order was to update and refine the representation of the hydraulics and hydrology in the existing adICPR model with data obtained subsequent to the completion of the 2001 Study for Subbasin 05-03. A major focus of this update was on the interconnection between Lake Onora and Silver Lake located in the northeast portion of the subbasin due to recent flooding complaints by local residents.

Data Collection

Since the completion of the 2001 Study, several activities have taken place within Subbasin 05-03 that have impacted the PSMS. The studies and projects that have occurred since 2001 that document these activities include:

- Drainage Calculations for Orlando Sanford International Airport (OSA) Southwest Basin (MTC Design, 2003)
- Orlando Sanford International Airport (OSA) Preliminary Stormwater Master Plan (PBS&J, 2002)
- East Lake Mary Blvd. PS-0137 Segment IIB, Brisson Avenue to SR 46 (Seminole County, 2004)
- East Lake Mary Blvd. PS-0137 Segment IIA (Seminole County, 2002)
- East Lake Mary Blvd. PS-0137 Segment I, Sanford Avenue to Ohio Avenue (Seminole County, 1998)
- Baker's Crossing Planned Development, Phase II (Neal Hiler Engineering Inc., 2002)
- Magnolia Park Planned Development (Briskey & Associates, 2003)

Each of the plans and studies listed above were obtained and reviewed by CDM. The appropriate information was used to update both the hydrologic and hydraulic representations of Subbasin 05-03. A description of the changes made is provided in the following paragraphs.

Hydrologic Unit Update

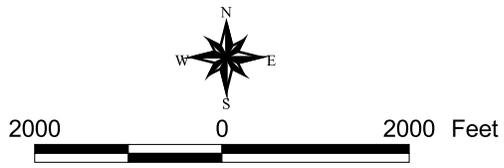
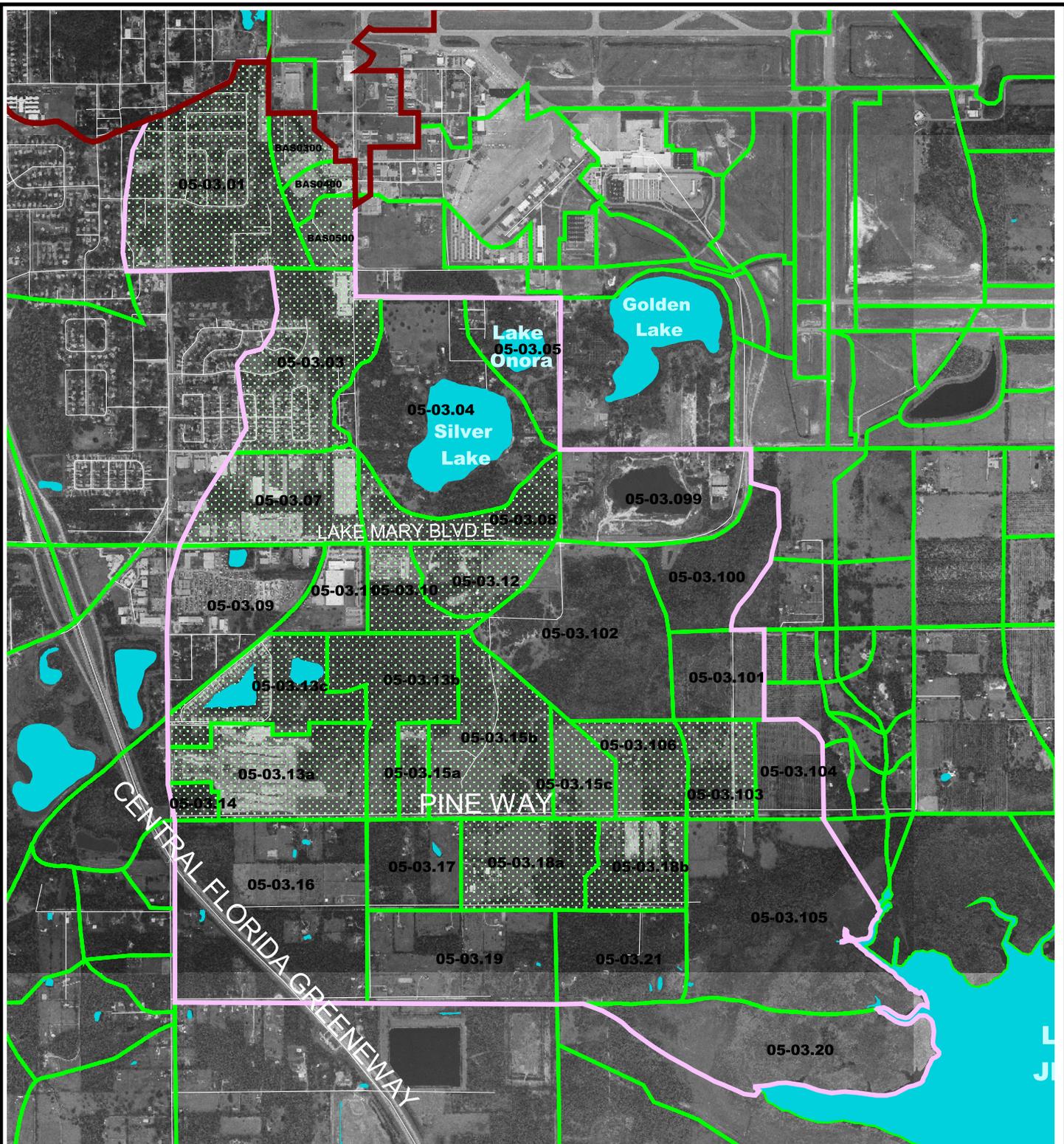
Those hydrologic unit boundaries that underwent modifications and refinement are shown highlighted in **Figure 2**. The changes were due to three major factors: 1) new development (i.e., Baker's Crossing and Magnolia Park Subdivisions); 2) more detailed hydrologic unit boundary delineation obtained from the OSA Stormwater Master Plan; and 3) further refinement by CDM for hydrologic units that were very

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Figure 2

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LEGEND

- ▭ Lake Jesup basin Boundary
- ▭ Subbasin 05-03
- ▭ Water Bodies
- ▭ Hydrologic Units
- Modified Hydrologic Units
- ▭ Roads

Seminole County, Florida
Lake Onora/Silver Lake Model Update



Figure 2
Revised Hydrologic Unit Boundaries

large (i.e., greater than 200 acres) or had more than one part of the PSMS flowing through an individual hydrologic unit. There were several hydrologic units in the northwest portion of the OSA that were included as part of the original delineation for the hydrologic units in Subbasin 05-03 in the 2001 Study. However, PBS&J (2002) determined that these hydrologic units in the northwest portion of the OSA actually discharge towards SR 46 and then eventually to Lake Monroe. Therefore, the boundary for Subbasin 05-03 was modified to reflect this as well as the larger Lake Jesup Boundary as shown in Figure 2. Once the boundaries were adjusted using the Geographic Information Systems (GIS) software package Arcview[®] 3.2a, the curve numbers and the time of concentrations were modified accordingly. Curve numbers for both existing and future land use conditions were re-calculated using a Microsoft[®] Access database management system using the land use and soils coverages developed for the 2001 Study. Time of concentration values were calculated using a Microsoft[®] Excel spreadsheet. A summary table listing each of the hydrologic units as well as their properties is shown below in **Table 1**.

Table 1
Lake Jesup Basin Engineering Study and Drainage Inventory
Lake Onora/Silver Lake Model Update
Hydrologic Units

Hydrologic Unit	Area (acres)	Curve Number (existing conditions)	Curve Number (future conditions)	Time of Concentration (min)	% DCIA
05-03.01	131.1	92	92	139	15.5%
05-03.03	90.7	86	87	213	1.7%
05-03.04	149.5	72	77	114	24.9%
05-03.05	43.4	78	80	51	19.3%
05-03.07	70.2	92	93	59	N/A
05-03.08	44.4	81	87	82	N/A
05-03.09	76.8	82	89	85	2.4%
05-03.099	81.9	75	83	25	4.4%
05-03.10	28.2	76	89	20	N/A
05-03.100	53.9	80	93	78	79.9%
05-03.101	39.8	79	87	12	8.8%
05-03.102	123.7	81	91	59	52.2%
05-03.103	33.5	84	87	56	0.1%
05-03.104	31.5	81	86	40	N/A
05-03.105	167.7	82	86	50	70.2%
05-03.106	37.5	80	86	55	2.8%
05-03.11	27.2	91	91	36	N/A
05-03.12	36.4	88	92	80	1.8%
05-03.13a	76.9	80	80	34	11.3%
05-03.13b	65.1	78	87	52	43.0%
05-03.13c	62.4	58	63	27	23.3%

Table 1
Lake Jesup Basin Engineering Study and Drainage Inventory
Lake Onora/Silver Lake Model Update
Hydrologic Units

Hydrologic Unit	Area (acres)	Curve Number (existing conditions)	Curve Number (future conditions)	Time of Concentration (min)	% DCIA
05-03.14	8.3	70	72	29	N/A
05-03.15a	14.2	93	93	50	0.4%
05-03.15b	82.9	82	93	33	37.8%
05-03.15c	26.3	82	87	89	6.7%
05-03.16	169.0	83	88	100	3.3%
05-03.17	41.4	81	85	52	1.3%
05-03.18a	57.8	84	87	74	N/A
05-03.18b	41.3	84	87	38	N/A
05-03.19	85.2	85	87	150	2.9%
05-03.20	106.4	98	98	110	99.6%
05-03.21	58.1	84	87	84	46.0%
BAS0300	15.8	81	92	43	N/A
BAS0400	13.0	82	89	24	N/A
BAS0500	16.7	57	85	32	N/A

Hydraulic Model Update

The original stormwater model from the 2001 Study was developed using adICPR Version 2.2 developed by Streamline Technologies, Inc. For the purposes of this project, CDM converted the existing model from adICPR Version 2.2 to ICPR® for Windows Version 3.02. Based on the review of available data, the original model schematic was updated to reflect changes made to the PSMS and these changes were then subsequently made to the model itself. An updated model schematic is provided in **Figure 3**.

Changes to the hydraulic components of the PSMS include the following:

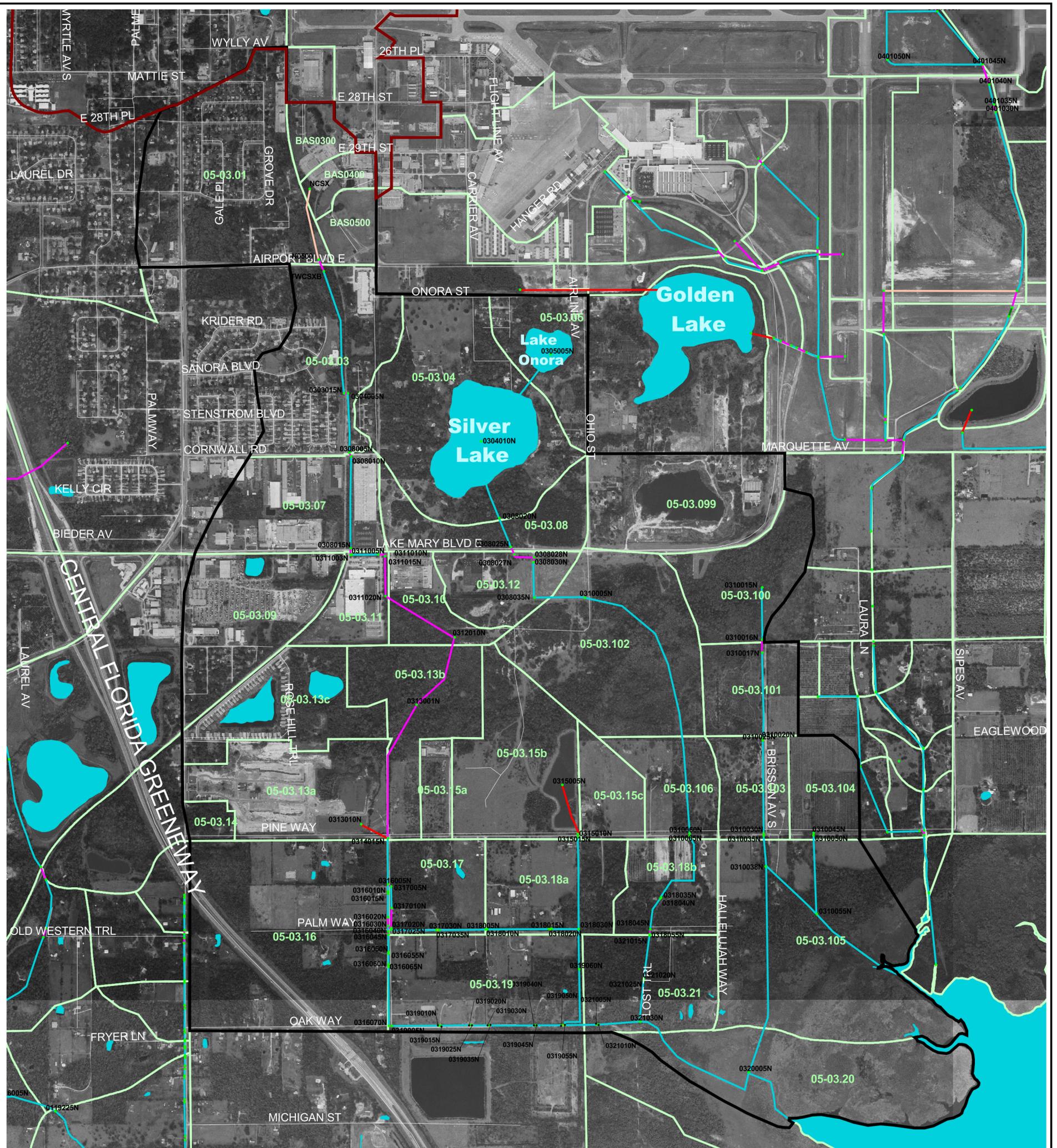
- OSA - The area to the north of Onora St., which previously discharged to the south through a 15-inch RCP under Onora St. to Lake Onora is now treated by a large stormwater detention facility whose overflow discharges towards Golden Lake and into Subbasin 05-04.
- Lake Onora/Silver Lake Connection - Southeastern Surveying and Mapping Corporation surveyed four (4) additional cross-sections to more accurately define the connection between these two lakes. Upon field inspection by the County, there were no culverts or overflow structures associated with these lakes or their connection to the PSMS. These four channel cross-sections were added to the updated model.

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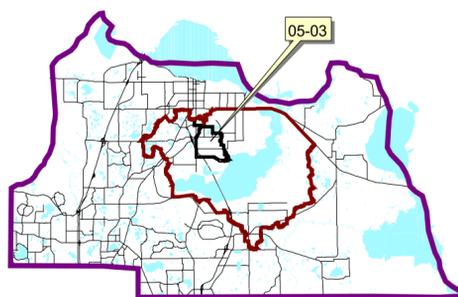
Figure 2

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1000 0 1000 2000 3000 Feet

LOCATION



LEGEND

- Lake Jesup basin Boundary
- Subbasin 05-03
- Existing Nodes
- Existing Conduits
- Bridge
- Channel
- Culvert
- Drop Structure
- Open Channel
- Overland Flow
- Weir
- Hydrologic Units
- Water Bodies
- Roads

Seminole County, Florida
 Lake Onora/Silver Lake Model Update



Figure 3
 Updated Model Schematic
 Existing Conditions

- East Lake Mary Blvd. – The majority of the crossings under East Lake Mary Blvd. remained the same, but their lengths were extended. The crossing under East Lake Mary Blvd. at Brisson Avenue, which was previously not included, was also added to the hydraulic model.
- Magnolia Park Planned Development – There were several modifications to the PSMS due to the development of this subdivision (hydrologic unit 05-03.13b). Approximately 556 feet of the open ditch system along Mellonville Avenue just south of East Lake Mary Blvd was replaced with three 48-inch RCPs (conduit 0311015C) and directed under Mellonville Avenue (conduit 0311020C) where the pipes discharged to a wetland area north of the Magnolia Park subdivision. Surface water from the wetland now flows through a newly constructed 76-inch by 48-inch double ERCP under Magnolia Park Trail to another wetland within the subdivision itself. The stormwater runoff generated within the Magnolia Park subdivision is treated and then discharged into this wetland. Surface water within the receiving wetland is then conveyed through a 84-inch RCP constructed as part of the Baker’s Crossing subdivision described in the subsequent paragraph.
- Baker’s Crossing Planned Development – The open channel that previously flowed between Baker’s Crossing (hydrologic unit 05-03.13a) and the Magnolia Park subdivisions was replaced with a 84-inch RCP approximately 1,100 feet long. The detention facility for the subdivision overflows into this 84-inch RCP closer to its downstream end. The 84-inch RCP crosses under Pine Way and discharges into the existing roadside ditch along Mellonville Avenue.

Incorporation of these data into the ICPR model define existing hydraulic conditions as of October 2004.

Results

Once the regional stormwater model was updated, CDM performed simulations of the mean annual, 10-, 25-, 50-, and 100-year/24-hour design storm events for both existing and future land use conditions for the Lake Jesup Basin. The ultimate final design scenario will be included as part of the Mellonville Avenue Regional Stormwater Treatment Facility Design as the specifics of the pond location have not been finalized at this time. The predicted peak stages and peak flows for all of the simulated storm events for both existing and future conditions are provided in **Attachment 1**.

These tables were updated from the 2001 Study and include the results from the mean annual, 10-, 25-, 50- and 100-year/24-hour design storm events as well as critical elevations, the level of service (LOS) provided, the current level of protection, capacity and demand flows. Peak flows are defined as the maximum flows through the conduit only. The County defines demand as the flow equal to the peak flow obtained for the applicable design storm event, including weir flow modeled for the

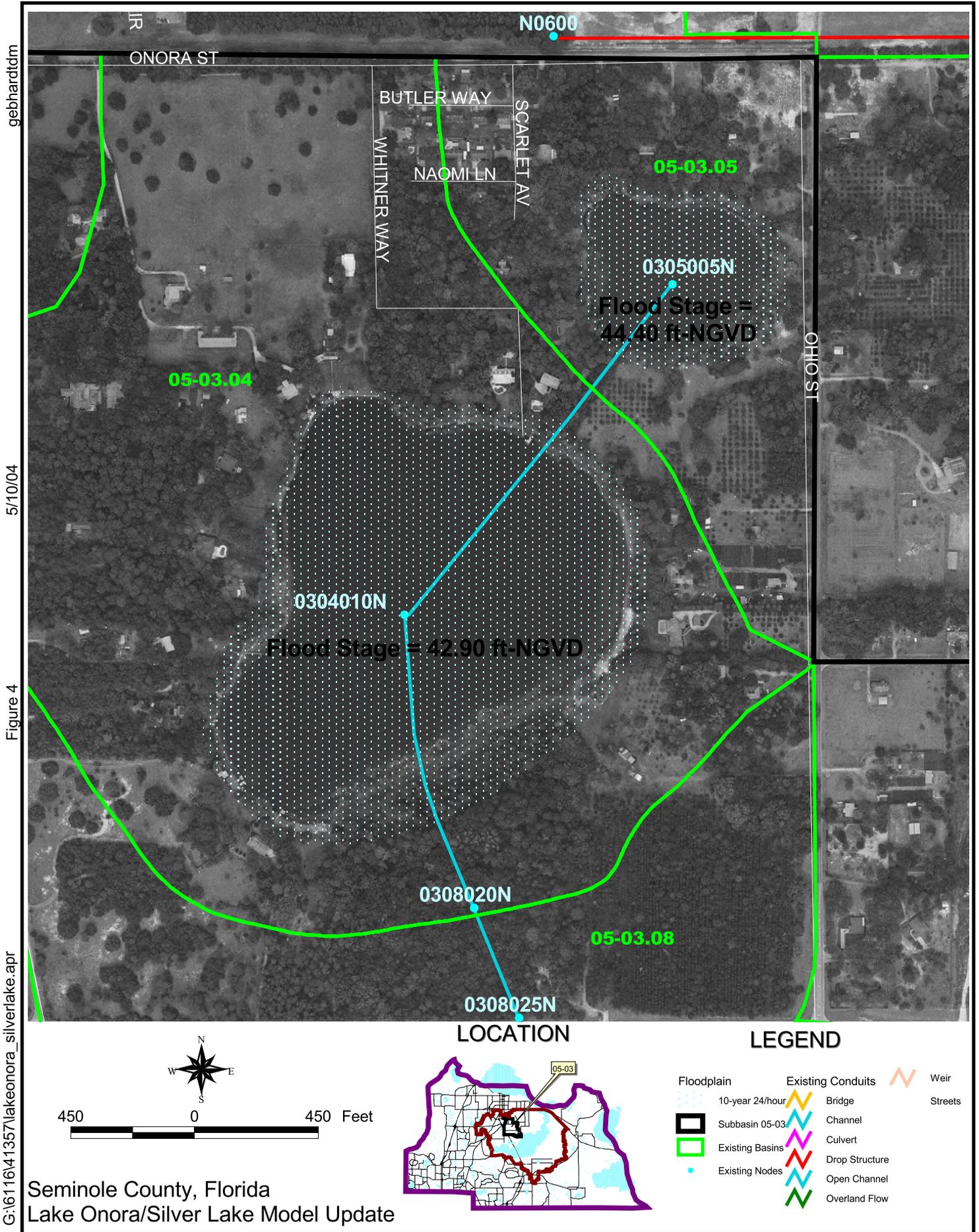
overtopping of a road. The PSMS capacity was defined as the stage and flow corresponding to the “critical elevation” that would attain a LOS B/C (i.e., no road overtopping or finished floor flooding). **Attachment 2** provides the modeling results for each scenario reported by individual model node.

Lake Onora is connected to Silver Lake by an open channel (conduit 0305005X). Based on the results for the existing and future model conditions, this channel meets its assigned LOS (25-year/24-hour storm event) but also can convey the 100-year/24-hour storm event without overtopping. Lake Silver discharges through two open channel segments (conduits 0304010X and 0308020X) before reaching the culvert crossing (conduit 0308025C) at East Lake Mary Blvd. Under existing and future conditions, the two open channels (conduits 0304010X and 0308020X) meet their assigned LOS (25-year/24-hour storm event). However, there is no protection provided beyond the 25-year/24-hour storm event. Surface water is then conveyed through a series of culvert crossings under East Lake Mary Blvd. These culverts were assigned a LOS for the 50-year/24-hour storm event. However these culvert crossings provide protection up through the 100-year storm event.

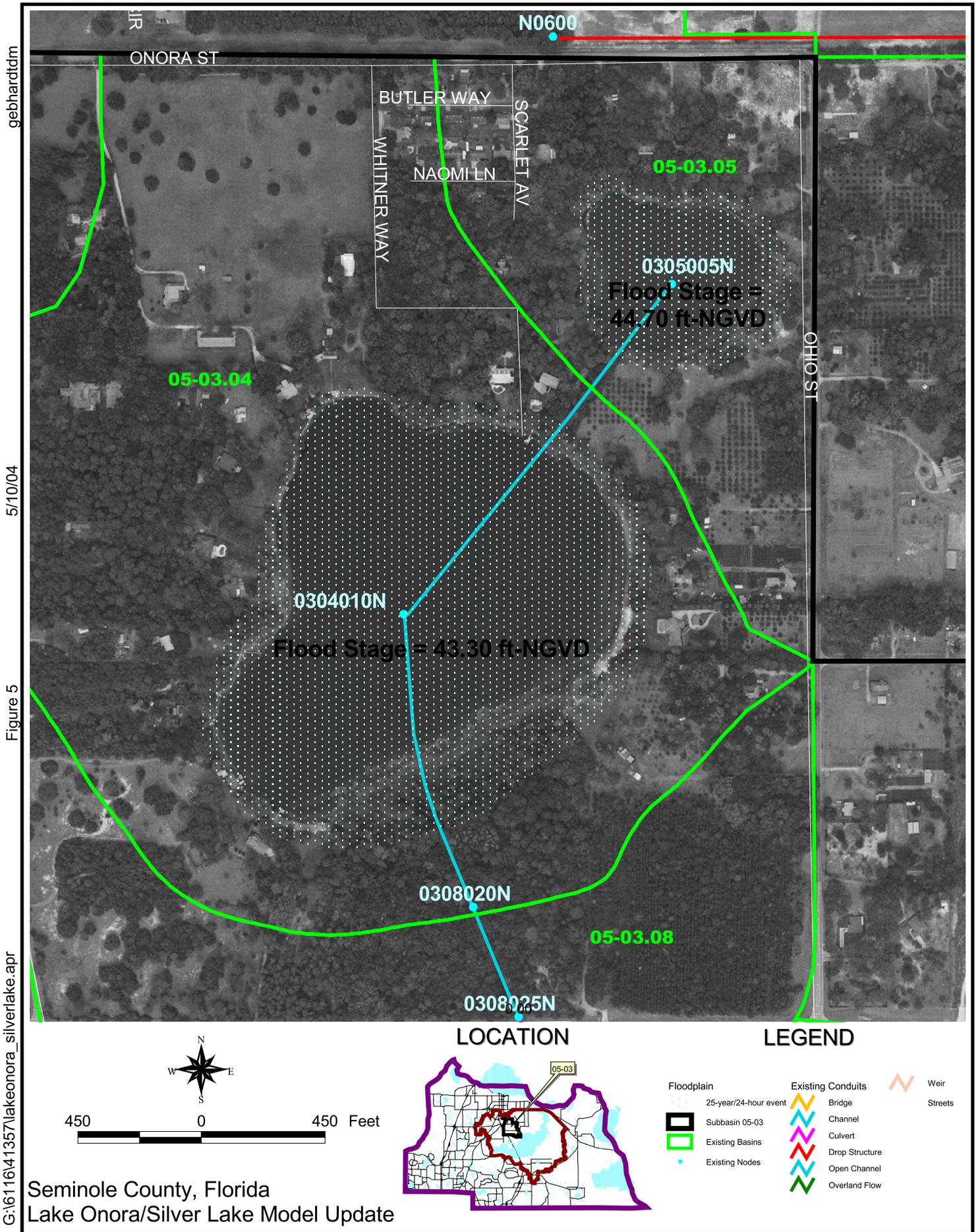
Since there was no predicted flooding associated with the open channels connecting Lake Onora and Silver, CDM examined the floodplain to determine the extent of flooding, if any, around Lake Onora itself. To determine this, CDM delineated the 10-, 25- and 100-year/24-hour floodplain boundaries, shown in **Figures 4, 5 and 6**, respectively. The predicted lake stages for each of these events are also provided in **Table 2**. For the 10-, 25- and 100-year events, at least one residence located on the east side of the lake is shown to be in the floodplain based on review of the aerial image. Based upon field inspection, the finished floor elevation of this residence appeared to be only slightly higher than the ground surface.

Table 2
Lake Jesup Basin Engineering Study and Drainage Inventory
Lake Onora/Silver Lake Model Update
Lake Flood Stages

Water Body	10-Year/24-Hour Flood Stage (ft-NGVD)	25-Year/24-Hour Flood Stage (ft-NGVD)	100-year/24-hour Flood Stage (ft-NGVD)
Lake Onora	44.4	44.7	45.2
Silver Lake	42.9	43.3	44.2



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 Figure 4
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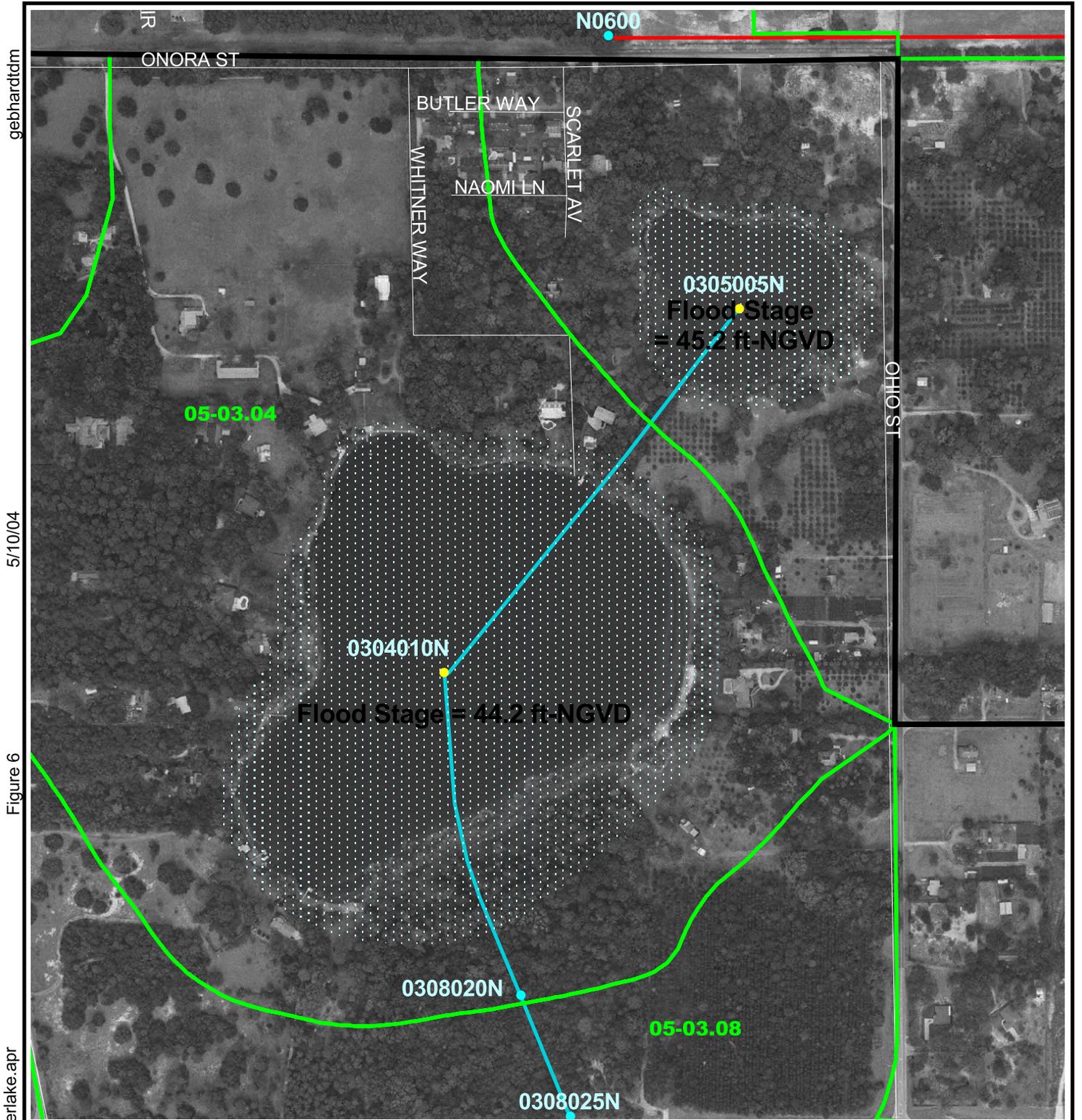


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Figure 5

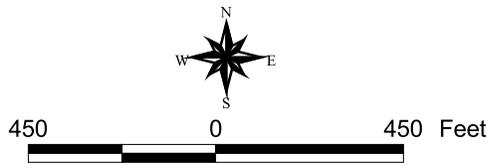
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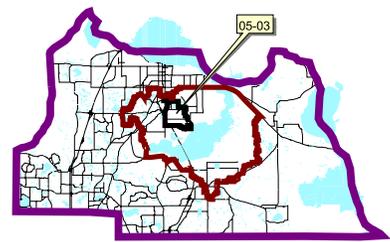
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Figure 6

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LOCATION



LEGEND

- | | | |
|------------------------|-------------------|---------|
| 100-year/24-hour event | Existing Conduits | Weir |
| Subbasin 05-03 | Bridge | Streets |
| Existing Basins | Channel | |
| Existing Nodes | Culvert | |
| | Drop Structure | |
| | Open Channel | |
| | Overland Flow | |

Seminole County, Florida
Lake Onora/Silver Lake Model Update



Figure 6
100-Year Floodplain Boundary

Attachment 1

Attachment 1
 Lake Jesup Basin, Subbasin 05-03 Update
 Existing Land Use/Present Hydraulics
 Open Channels

Model ID	Critical	Design	U/S Node	D/S Node	Mean Annual		10 Year 24 Hour Storm		25 Year 24 Hour Storm		50 Year 24 Hour Storm		100 Year 24 Hour Storm		LOS Provided	Current Level of Protection	Capacity Flow (cfs)
	TOB D/S				Stage (ft)	Flow (cfs)	Stage (ft)	Flow (cfs)	Stage (ft)	Flow (cfs)	Stage (ft)	Flow (cfs)	Stage (ft)	Flow (cfs)			
0303010X	50.87	25	TWCSXB	0303015N	48.4	118	49.8	154	51.1	190	52.2	228	52.9	258	C	10 Yr	166
0304005X	53.81	25	0304005N	0308005N	47.8	109	49.2	139	50.2	167	50.8	197	51.2	218	A	100 Yr	224
0304010X	43.30	25	0304010N	0308020N	42.2	12	42.8	20	43.3	30	43.7	35	44.1	38	A	25 Yr	34
0305005X	49.85	25	0305005N	0304010N	42.6	6	42.9	10	43.4	16	43.9	24	44.3	32	A	100 Yr	33
0308010X	49.85	25	0308010N	0308015N	47.2	110	48.7	144	49.7	171	50.1	208	50.4	231	A	25 Yr	197
0308020X	43.67	25	0308020N	0308025N	42.5	12	43.2	20	43.5	30	43.9	35	44.1	39	A	25 Yr	36
0308030X	43.20	25	0308030N	0308035N	38.6	32	38.6	35	38.8	37	39.0	40	39.1	45	A	100 Yr	51
0308035X	37.20	25	0308035N	0310005N	37.2	73	36.1	88	36.4	104	36.7	122	36.9	136	A	100 Yr	145
0310005X	22.75	25	0310005N	0310060N	24.7	386	25.0	277	25.2	339	25.6	413	25.8	470	D	Submerged	Min Stage > Critical Stage
0310015X	26.75	25	0310015N	0310016N	29.9	43	30.9	87	31.6	133	31.9	208	31.9	269	D	Submerged	Min Stage > Critical Stage
0310017X	17.40	25	0310017N	0310020N	27.4	39	27.9	57	28.1	73	28.2	79	28.2	79	D	Submerged	Min Stage > Critical Stage
0310020X	14.30	25	0310065N	0318035N	16.3	192	16.6	259	16.9	352	17.3	443	17.5	518	D	Submerged	Min Stage > Critical Stage
0310025X	22.75	25	0310025N	0310030N	21.0	40	21.5	51	21.6	71	21.9	82	22.0	78	A	100 Yr	84
0310035X	17.40	25	0310035N	0310038N	12.2	79	12.2	86	12.2	92	12.2	122	12.2	130	A	100 Yr	136
0310038X	0.90	25	0310038N	0320005N	4.8	54	4.8	66	4.8	71	4.8	84	4.8	100	D	Submerged	Min Stage > Critical Stage
0310039X	10.40	25	0310038N	0310055N	7.5	15	7.6	18	7.7	19	7.8	22	7.8	26	A	100 Yr	27
0310045X	36.87	10	0310045N	0404007N	17.7	0	18.0	0	18.4	0	19.5	3	19.8	5	A	100 Yr	5
0310050X	7.90	25	0310050N	0310055N	7.5	43	7.6	64	7.7	81	7.8	116	7.8	136	A	100 Yr	146
0310055X	3.60	25	0310055N	1101005N	4.8	305	4.8	407	4.8	511	4.8	632	4.8	724	D	Submerged	Min Stage > Critical Stage
0311005X	47.65	25	0311005N	0311010N	46.4	157	47.4	190	47.8	234	48.1	283	48.2	315	B	10 Yr	222
0314015X	18.90	25	0314015N	0316005N	19.2	337	19.7	456	19.8	546	19.9	642	20.1	735	D	Submerged	Min Stage > Critical Stage
0315015X	15.75	25	0315015N	0318030N	10.8	37	11.2	48	11.5	62	11.9	74	12.1	93	A	100 Yr	147
0316005X	16.99	10	0316005N	0316010N	18.9	207	19.2	291	19.4	359	19.6	437	19.7	501	D	Submerged	Min Stage > Critical Stage
0316015X	15.89	10	0316015N	0316020N	17.3	206	17.8	291	18.0	357	18.2	437	18.4	501	D	Submerged	Min Stage > Critical Stage
0316030X	15.30	10	0316030N	0316040N	16.4	185	16.8	292	17.0	352	17.2	414	17.3	469	D	Submerged	Min Stage > Critical Stage
0316045X	13.02	10	0316045N	0316050N	14.6	179	15.0	280	15.2	344	15.5	405	15.7	461	D	Submerged	Min Stage > Critical Stage
0316055X	13.87	10	0316055N	0316060N	14.6	166	14.9	252	15.1	319	15.5	379	15.7	434	D	Submerged	Min Stage > Critical Stage
0316065X	10.81	10	0316065N	0316070N	14.1	158	14.6	241	15.0	307	15.4	367	15.7	421	D	Submerged	Min Stage > Critical Stage
0317005X	15.47	10	0317005N	0317010N	17.3	114	17.5	150	17.7	174	17.8	198	17.9	224	D	Submerged	Min Stage > Critical Stage
0317025X	14.10	10	0317025N	0317030N	12.1	67	12.7	119	13.2	163	13.8	271	14.2	317	A	50 Yr	289
0317035X	11.95	25	0317035N	0318005N	11.1	73	11.7	111	12.3	150	12.9	193	13.3	221	C	10 Yr	119
0318010X	12.30	25	0318010N	0318015N	10.9	70	11.4	94	11.7	126	12.1	157	12.3	177	A	50 Yr	167
0318020X	13.20	10	0318020N	0318030N	10.8	62	11.2	78	11.5	94	11.9	110	12.1	121	A	100 Yr	118
0318030X	12.10	10	0318030N	0319060N	10.1	106	10.3	133	10.4	159	10.6	196	10.7	222	A	100 Yr	234
0318040X	11.08	25	0318040N	0318045N	12.1	265	12.4	282	12.8	394	13.1	496	13.4	580	D	Submerged	Min Stage > Critical Stage
0319005X	11.05	25	0319005N	0319010N	11.5	113	12.6	185	13.3	261	13.8	352	14.1	418	D	Submerged	Min Stage > Critical Stage
0319015X	9.79	25	0319015N	0319020N	10.8	87	11.7	114	12.8	169	13.5	254	13.8	325	D	Submerged	Min Stage > Critical Stage
0319025X	9.90	25	0319025N	0319030N	10.4	73	10.9	94	11.4	124	11.8	200	12.1	266	D	Submerged	Min Stage > Critical Stage
0319035X	12.63	25	0319035N	0319040N	9.8	90	10.1	116	10.4	149	10.8	224	11.2	289	A	100 Yr	291
0319045X	12.23	25	0319045N	0319050N	9.6	90	10.0	116	10.2	149	10.5	218	10.9	274	A	100 Yr	276
0319055X	10.35	25	0319055N	0321005N	8.8	180	9.0	232	9.2	296	9.5	392	9.8	465	A	100 Yr	472
0319060X	11.10	25	0319060N	0319055N	9.6	101	10.0	129	10.1	157	10.4	191	10.7	210	A	100 Yr	219
0320005X	1.78	25	0320005N	1101005N	4.8	385	4.8	522	4.8	691	4.8	851	4.8	975	D	Submerged	Min Stage > Critical Stage
0321010X	9.88	25	0321010N	0321030N	8.7	190	8.9	234	9.0	296	9.1	392	9.2	464	A	100 Yr	472
0321015X	7.00	25	0321015N	0321020N	9.7	192	9.9	265	10.2	365	10.5	463	10.7	544	D	Submerged	Min Stage > Critical Stage
0321025X	6.90	25	0321025N	0321030N	8.7	184	8.9	257	9.0	354	9.1	450	9.2	530	D	Submerged	Min Stage > Critical Stage
0321030X	4.80	25	0321030N	0320005N	4.8	287	4.8	388	4.8	508	4.8	626	4.8	717	B	Submerged	Min Stage > Critical Stage

- Note: 1) Trapezoidal road side swales assumed depth of 3 feet.
 2) If maximum stage less than critical stage - capacity flow equals maximum flow.
 3) Existing capacity flow based upon future land use conditions.

Attachment 1
Lake Jesup Basin, Subbasin 05-03 Update
Existing Land Use/Present Hydraulics
Culverts/Bridges

Model ID	Critical Elevation	Design Storm	U/S Node	D/S Node	Mean Annual		10 Year 24 Hour		25 Year 24 Hour		50 year 24 Hour		100 Year 24 Hour		LOS Provided	Current Level of Protection	Demand Flow (cfs)	Capacity (cfs)
					Stage (ft)	Flow (cfs)	Stage (ft)	Flow (cfs)	Stage (ft)	Flow (cfs)	Stage (ft)	Flow (cfs)	Stage (ft)	Flow (cfs)				
0303015C	53.80	25	0303015N	0304005N	48.4	109	49.8	137	51.1	166	52.2	196	52.9	218	A	100 Yr	166	223
0308005C	54.80	25	0308005N	0308010N	47.8	110	49.2	146	50.2	169	50.8	197	51.2	219	A	100 Yr	169	224
0308015C	49.50	50	0308015N	0311003N	47.2	157	48.7	197	49.7	227	50.1	231	50.4	231	B	10 Yr	307	230
0308025C	45.00	50	0308025N	0308026N	42.5	32	43.2	35	43.5	37	43.9	40	44.1	41	A	100 Yr	40	42
0308027C	45.00	50	0308027N	0308028N	41.8	32	42.0	35	42.1	37	42.2	40	42.3	41	A	100 Yr	40	42
0308028C	45.00	50	0308028N	0308030N	39.8	32	39.9	35	39.9	37	40.0	40	40.1	41	A	100 Yr	40	42
0310015C	24.27	50	0310060N	0310065N	24.7	146	25.0	155	25.2	248	25.6	248	25.8	249	D	Submerged	492	Min Stage > Critical Stage
0310016C	34.14	50	0310016N	0310017N	29.9	45	30.9	71	31.6	87	31.9	93	31.9	93	A	100 Yr	93	95
0310020C	27.80	25	0310020N	0310025N	27.4	14	27.9	14	28.1	14	28.2	14	28.2	14	C	Mean	28	14
0310021C	27.80	25	0310020N	0310025N	27.4	25	27.9	31	28.1	32	28.2	32	28.2	32	D	Mean	46	28
0310030C	21.50	50	0310030N	0310035N	21.0	79	21.5	86	21.6	88	21.9	88	22.0	89	B	10 Yr	124	87
0310045C	19.47	50	0310045N	0310050N	16.9	45	17.5	66	18.2	86	19.1	119	19.6	135	A	50 Yr	119	131
0311003C	49.50	50	0311003N	0311005N	46.8	157	48.0	193	48.7	235	49.3	283	49.6	307	A	50 Yr	283	310
0311010C	48.46	25	0311010N	0311015N	46.4	157	47.4	206	47.8	209	48.1	206	48.2	209	A	100 Yr	250	222
0311015C	48.50	25	0311015N	0311020N	46.1	157	46.6	190	47.0	193	47.3	193	47.5	193	A	100 Yr	193	215
0311020C	45.00	25	0311020N	0312010N	45.4	52	45.6	57	45.8	61	46.0	66	46.1	68	D	Submerged	72	Min Stage > Critical Stage
0311021C	45.00	25	0311020N	0312010N	45.4	52	45.6	57	45.8	61	46.0	66	46.1	69	D	Submerged	72	Min Stage > Critical Stage
0311022C	45.00	25	0311020N	0312010N	45.4	52	45.6	58	45.8	62	46.0	67	46.1	69	D	Submerged	73	Min Stage > Critical Stage
0312010C	39.18	25	0312010N	0313001N	34.5	192	35.1	249	35.6	302	36.1	350	36.5	386	A	100 Yr	302	423
0313001C	29.00	25	0313001N	0313020N	26.1	355	27.4	401	28.8	452	29.8	486	30.3	504	A	25 Yr	452	462
0315010C	25.38	50	0315010N	0315015N	23.9	18	24.7	31	25.5	35	25.7	35	25.9	35	B	10 Yr	66	36
0316005C	19.30	25	0316005N	0317005N	19.2	124	19.7	130	19.8	133	19.9	134	20.1	134	D	Mean	189	123
0316010C	17.90	25	0316010N	0316015N	18.9	72	19.2	73	19.4	72	19.6	71	19.7	71	D	Submerged	385	Min Stage > Critical Stage
0316020C	16.70	25	0316020N	0316030N	17.3	136	17.8	143	18.0	145	18.2	142	18.4	135	D	Submerged	400	Min Stage > Critical Stage
0316030C	16.20	25	0316030N	0317025N	16.5	50	16.8	51	17.0	55	17.2	59	17.3	59	D	Submerged	164	Min Stage > Critical Stage
0316040C	15.50	25	0316040N	0316045N	16.4	35	16.8	36	17.0	36	17.2	36	17.3	35	D	Submerged	349	Min Stage > Critical Stage
0316050C	13.50	25	0316050N	0316055N	14.6	16	15.0	16	15.2	16	15.5	15	15.7	15	D	Submerged	327	Min Stage > Critical Stage
0316060C	13.70	25	0316060N	0316065N	14.6	29	14.9	31	15.1	31	15.5	31	15.7	30	D	Submerged	317	Min Stage > Critical Stage
0316070C	9.70	25	0316070N	0319005N	14.1	64	14.6	65	15.0	67	15.4	68	15.7	68	D	Submerged	275	Min Stage > Critical Stage
0317010C	16.77	25	0317010N	0317020N	17.3	89	17.5	82	17.7	76	17.8	72	17.9	70	D	Submerged	210	Min Stage > Critical Stage
0317020C	16.75	25	0317020N	0316030N	17.1	88	17.4	88	17.5	87	17.6	85	17.7	84	D	Submerged	190	Min Stage > Critical Stage
0317030B	14.70	25	0317030N	0317035N	12.1	66	12.7	113	13.2	154	13.8	210	14.2	233	A	100 Yr	154	247
0318005C	13.70	25	0318005N	0318010N	11.1	70	11.7	94	12.3	126	12.9	157	13.3	177	A	100 Yr	126	183
0318015B	13.66	25	0318015N	0318020N	10.9	60	11.4	74	11.7	97	12.1	114	12.3	124	A	100 Yr	97	127
0318035C	15.10	10	0318035N	0318040N	16.3	25	16.6	26	16.9	27	17.3	28	17.5	29	D	Submerged	256	Min Stage > Critical Stage
0318045C	10.90	10	0318045N	0318055N	12.1	13	12.4	12	12.8	13	13.1	12	13.4	12	D	Submerged	273	Min Stage > Critical Stage
0318055C	11.40	25	0318055N	0321015N	11.0	13	11.1	12	11.2	13	11.3	12	11.4	12	A	100 Yr	13	12
0319010C	12.70	25	0319010N	0319015N	11.5	87	12.6	114	13.3	130	13.8	135	14.1	137	D	10 Yr	201	116
0319020C	12.90	25	0319020N	0319025N	10.8	76	11.7	97	12.8	128	13.5	145	13.8	149	D	25 Yr	128	132
0319030B	11.30	25	0319030N	0319035N	10.4	72	10.9	93	11.4	119	11.8	135	12.1	148	D	10 Yr	122	116
0319040B	11.70	25	0319040N	0319045N	9.8	90	10.1	116	10.4	149	10.8	222	11.2	282	A	100 Yr	149	302
0319050B	11.00	25	0319050N	0319055N	9.6	90	10.0	118	10.2	149	10.5	215	10.9	268	C	100 Yr	149	286
0321005B	11.00	25	0321005N	0321010N	8.8	196	9.0	233	9.2	296	9.5	392	9.8	464	A	100 Yr	296	502
0321020C	8.60	10	0321020N	0321025N	9.7	28	9.9	28	10.2	29	10.5	29	10.7	29	D	Submerged	266	Min Stage > Critical Stage

Note: 1) Demand for multiple culverts at a single location = the sum of the culvert flow with a portion of the overroad weir flow.
2) If maximum stage is less than critical, capacity = maximum flow

Attachment 1
Lake Jesup Basin, Subbasin 05-03 Update
Future Land Use/Present Hydraulics
Open Channels

Model ID	Critical				Mean Annual		10 Year 24 Hour Storm		25 Year 24 Hour Storm		50 Year 24 Hour Storm		100 Year 24 Hour Storm		LOS Provided	Current Level of Protection	Capacity Flow (cfs)
	TOB D/S	Design	U/S Node	D/S Node	Stage (ft)	Flow (cfs)	Stage (ft)	Flow (cfs)	Stage (ft)	Flow (cfs)	Stage (ft)	Flow (cfs)	Stage (ft)	Flow (cfs)			
0303010X	50.87	25	TWCSXB	0303015N	48.7	128	50.1	164	51.4	199	52.4	238	53.0	267	C	10 Yr	166
0304005X	53.81	25	0304005N	0308005N	48.0	119	49.4	150	50.3	175	51.0	203	51.3	224	A	100 Yr	224
0304010X	43.30	25	0304010N	0308020N	42.3	13	43.0	22	43.5	32	43.9	36	44.2	42	B	10 Yr	34
0305005X	49.85	25	0305005N	0304010N	42.7	6	43.0	10	43.5	16	44.0	26	44.3	33	A	100 Yr	33
0308010X	49.85	25	0308010N	0308015N	47.4	120	48.9	157	49.8	179	50.2	216	50.4	236	A	25 Yr	197
0308020X	43.67	25	0308020N	0308025N	42.9	13	43.3	22	43.7	32	44.0	36	44.1	42	B	10 Yr	36
0308030X	43.20	25	0308030N	0308035N	38.5	34	38.6	36	38.8	38	39.0	41	39.2	50	A	100 Yr	51
0308035X	37.20	25	0308035N	0310005N	35.8	76	36.1	92	36.4	108	36.7	126	36.9	144	A	100 Yr	145
0310005X	22.75	25	0310005N	0310060N	24.7	229	25.1	292	25.3	360	25.6	433	25.8	491	D	Submerged	Min Stage > Critical Stage
0310015X	26.75	25	0310015N	0310016N	30.3	60	31.3	110	31.8	169	31.9	250	32.0	310	D	Submerged	Min Stage > Critical Stage
0310017X	17.40	25	0310017N	0310020N	27.6	46	28.0	65	28.2	77	28.2	79	28.2	79	D	Submerged	Min Stage > Critical Stage
0310020X	14.30	25	0310065N	0318035N	16.3	193	16.8	310	17.0	375	17.4	472	17.6	548	D	Submerged	Min Stage > Critical Stage
0310025X	22.75	25	0310025N	0310030N	21.2	42	21.5	59	21.6	82	21.9	79	22.0	84	A	100 Yr	84
0310035X	17.40	25	0310035N	0310038N	12.2	81	12.2	87	12.2	95	12.2	126	12.2	136	A	100 Yr	136
0310038X	0.90	25	0310038N	0320005N	4.8	58	4.8	67	4.8	73	4.8	95	4.8	105	D	Submerged	Min Stage > Critical Stage
0310039X	10.40	25	0310038N	0310055N	7.5	16	7.6	18	7.7	20	7.8	24	7.8	27	A	100 Yr	27
0310045X	36.87	10	0310045N	0404007N	17.8	0	18.1	0	18.8	1	19.6	4	19.9	5	A	100 Yr	5
0310050X	7.90	25	0310050N	0310055N	7.5	50	7.6	71	7.7	92	7.8	124	7.8	146	A	100 Yr	146
0310055X	3.60	25	0310055N	1101005N	4.8	320	4.8	422	4.8	527	4.8	649	4.8	741	D	Submerged	Min Stage > Critical Stage
0311005X	47.65	25	0311005N	0311010N	46.2	176	47.4	206	47.8	251	48.1	297	48.2	330	B	10 Yr	237
0314015X	18.90	25	0314015N	0316005N	19.3	356	19.7	482	19.8	569	20.0	683	20.1	774	D	Submerged	Min Stage > Critical Stage
0315015X	15.75	25	0315015N	0318030N	11.0	42	11.3	55	11.7	83	12.0	111	12.2	152	A	100 Yr	147
0316005X	16.99	10	0316005N	0316010N	18.9	225	19.3	321	19.5	382	19.7	466	19.8	528	D	Submerged	Min Stage > Critical Stage
0316015X	15.89	10	0316015N	0316020N	17.5	225	17.9	320	18.1	381	18.3	466	18.5	565	D	Submerged	Min Stage > Critical Stage
0316030X	15.30	10	0316030N	0316040N	16.6	224	16.9	311	17.0	369	17.2	438	17.3	492	D	Submerged	Min Stage > Critical Stage
0316045X	13.02	10	0316045N	0316050N	14.7	207	15.1	302	15.3	360	15.6	429	15.9	484	D	Submerged	Min Stage > Critical Stage
0316055X	13.87	10	0316055N	0316060N	14.7	192	15.0	280	15.2	339	15.6	403	15.8	455	D	Submerged	Min Stage > Critical Stage
0316065X	10.81	10	0316065N	0316070N	14.3	183	14.7	269	15.2	328	15.5	390	15.8	442	D	Submerged	Min Stage > Critical Stage
0317005X	15.47	10	0317005N	0317010N	17.4	115	17.6	156	17.7	180	17.8	209	17.9	237	D	Submerged	Min Stage > Critical Stage
0317025X	14.10	10	0317025N	0317030N	12.3	91	12.9	132	13.4	182	14.0	288	14.3	356	A	50 Yr	289
0317035X	11.95	25	0317035N	0318005N	11.4	84	11.9	124	12.5	164	13.1	206	13.4	229	D	10 Yr	128
0318010X	12.30	25	0318010N	0318015N	11.1	78	11.5	105	11.9	136	12.2	165	12.4	183	A	50 Yr	167
0318020X	13.20	10	0318020N	0318030N	11.0	69	11.3	82	11.7	99	12.0	114	12.2	128	A	100 Yr	118
0318030X	12.10	10	0318030N	0319060N	10.2	113	10.4	142	10.5	175	10.6	206	10.8	247	A	100 Yr	234
0318040X	11.08	25	0318040N	0318045N	12.1	265	12.6	336	12.9	419	13.2	528	13.5	613	D	Submerged	Min Stage > Critical Stage
0319005X	11.05	25	0319005N	0319010N	11.8	136	12.9	208	13.5	293	13.9	382	14.2	449	D	Submerged	Min Stage > Critical Stage
0319015X	9.79	25	0319015N	0319020N	11.1	97	12.0	123	13.1	196	13.7	283	14.0	355	D	Submerged	Min Stage > Critical Stage
0319025X	9.90	25	0319025N	0319030N	10.6	81	11.0	101	11.5	142	12.0	227	12.2	295	D	Submerged	Min Stage > Critical Stage
0319035X	12.63	25	0319035N	0319040N	9.9	98	10.2	122	10.5	163	10.9	251	11.4	312	A	100 Yr	291
0319045X	12.23	25	0319045N	0319050N	9.8	98	10.1	122	10.3	163	10.7	242	11.0	292	A	100 Yr	276
0319055X	10.35	25	0319055N	0321005N	8.9	194	9.0	249	9.3	324	9.6	424	10.0	594	A	100 Yr	472
0319060X	11.10	25	0319060N	0319055N	9.7	110	10.0	138	10.2	172	10.5	200	10.8	225	A	100 Yr	219
0320005X	1.78	25	0320005N	1101005N	4.8	409	4.8	572	4.8	728	4.8	890	4.8	1023	D	Submerged	Min Stage > Critical Stage
0321010X	9.88	25	0321010N	0321030N	8.8	200	8.9	250	9.0	325	9.1	424	9.2	502	A	100 Yr	472
0321015X	7.00	25	0321015N	0321020N	9.7	197	10.0	302	10.3	389	10.5	493	10.7	577	D	Submerged	Min Stage > Critical Stage
0321025X	6.90	25	0321025N	0321030N	8.8	193	8.9	293	9.0	378	9.1	480	9.2	561	D	Submerged	Min Stage > Critical Stage
0321030X	4.80	25	0321030N	0320005N	4.8	301	4.8	429	4.8	539	4.8	660	4.8	754	B	Submerged	Min Stage > Critical Stage

Note: 1) Trapezoidal road side swales assumed depth of 3 feet.
2) If maximum stage less than critical stage, capacity equals maximum flow

Attachment 1
 Lake Jesup Basin, Subbasin 05-03 Update
 Future Land Use/Present Hydraulics
 Culverts/Bridges

Model ID	Critical Elevation	Design Storm	U/S Node	D/S Node	Mean Annual		10 Year 24 Hour		25 Year 24 Hour		50 year 24 Hour		100 Year 24 Hour		LOS Provided	Current Level of Protection	Demand Flow	Capacity (cfs)
					Stage (ft)	Flow (cfs)	Stage (ft)	Flow (cfs)	Stage (ft)	Flow (cfs)	Stage (ft)	Flow (cfs)	Stage (ft)	Flow (cfs)				
0303015C	53.80	25	0303015N	0304005N	48.7	118	50.1	147	51.4	173	52.4	202	53.0	223	A	100 Yr	173	223
0308005C	54.80	25	0308005N	0308010N	48.0	119	49.4	153	50.3	176	51.0	204	51.3	224	A	100 Yr	176	224
0308015C	49.50	50	0308015N	0311003N	47.4	176	48.9	217	49.8	234	50.2	236	50.4	236	D	10 Yr	330	232
0308025C	45.00	50	0308025N	0308026N	42.9	34	43.3	36	43.7	38	44.0	41	44.1	42	A	100 Yr	41	42
0308027C	45.00	50	0308027N	0308028N	41.9	34	42.0	36	42.1	38	42.3	41	42.3	42	A	100 Yr	41	42
0308028C	45.00	50	0308028N	0308030N	39.8	34	39.9	36	40.0	38	40.0	41	40.2	42	A	100 Yr	41	42
0310015C	24.27	50	0310060N	0310065N	24.7	147	25.1	247	25.3	247	25.6	248	25.8	249	D	Submerged	520	Min Stage > Critical Stage
0310016C	34.14	50	0310016N	0310017N	30.3	57	31.3	79	31.8	90	31.9	92	32.0	95	A	100 Yr	92	95
0310020C	27.80	25	0310020N	0310025N	27.6	14	28.0	15	28.2	14	28.2	14	28.2	15	C	Mean	31	15
0310021C	27.80	25	0310020N	0310025N	27.6	27	28.0	32	28.2	32	28.2	32	28.2	33	C	Mean	49	28
0310030C	21.50	50	0310030N	0310035N	21.2	81	21.5	87	21.6	88	21.9	88	22.0	89	D	10 Yr	128	87
0310045C	19.47	50	0310045N	0310050N	17.1	53	17.7	74	18.5	94	19.4	128	19.7	137	A	50 Yr	128	131
0311003C	49.50	50	0311003N	0311005N	46.9	176	48.0	211	48.8	252	49.4	298	49.7	316	A	50 Yr	298	310
0311010C	48.46	25	0311010N	0311015N	46.2	210	47.4	223	47.8	223	48.1	221	48.2	222	A	100 Yr	260	222
0311015C	48.50	25	0311015N	0311020N	45.9	176	46.5	205	46.8	214	47.1	215	47.3	215	A	100 Yr	214	215
0311020C	45.00	25	0311020N	0312010N	44.9	61	45.3	73	45.5	79	45.7	87	45.8	91	C	Mean	90	61
0311021C	45.00	25	0311020N	0312010N	44.9	62	45.3	74	45.5	81	45.7	88	45.8	93	C	Mean	92	62
0311022C	45.00	25	0311020N	0312010N	44.9	63	45.3	75	45.5	82	45.7	90	45.8	95	C	Mean	93	63
0312010C	39.18	25	0312010N	0313001N	34.7	214	35.3	273	35.9	333	36.5	387	36.8	423	A	100 Yr	333	423
0313001C	29.00	25	0313001N	0313020N	26.3	366	28.1	427	29.4	471	30.2	499	30.7	515	C	10 Yr	484	462
0315010C	25.38	50	0315010N	0315015N	24.2	28	25.1	34	25.6	39	25.8	39	25.9	39	D	10 Yr	79	36
0316005C	19.30	25	0316005N	0317005N	19.3	126	19.7	130	19.8	132	20.0	133	20.1	133	D	Submerged	191	Min Stage > Critical Stage
0316010C	17.90	25	0316010N	0316015N	18.9	72	19.3	72	19.5	72	19.7	71	19.8	70	D	Submerged	411	Min Stage > Critical Stage
0316020C	16.70	25	0316020N	0316030N	17.5	138	17.9	142	18.1	141	18.3	133	18.5	122	D	Submerged	420	Min Stage > Critical Stage
0316030C	16.20	25	0316030N	0317025N	16.6	50	16.9	51	17.0	57	17.2	59	17.3	59	D	Submerged	177	Min Stage > Critical Stage
0316040C	15.50	25	0316040N	0316045N	16.6	35	16.9	36	17.0	36	17.2	35	17.3	34	D	Submerged	366	Min Stage > Critical Stage
0316050C	13.50	25	0316050N	0316055N	14.7	16	15.1	16	15.3	15	15.6	15	15.9	15	D	Submerged	348	Min Stage > Critical Stage
0316060C	13.70	25	0316060N	0316065N	14.7	30	15.0	31	15.2	31	15.6	30	15.8	29	D	Submerged	339	Min Stage > Critical Stage
0316070C	9.70	25	0316070N	0319005N	14.3	64	14.7	66	15.2	67	15.5	68	15.8	69	D	Submerged	309	Min Stage > Critical Stage
0317010C	16.77	25	0317010N	0317020N	17.4	85	17.6	77	17.7	73	17.8	70	17.9	69	D	Submerged	215	Min Stage > Critical Stage
0317020C	16.75	25	0317020N	0316030N	17.2	87	17.4	87	17.5	85	17.7	83	17.8	83	D	Submerged	197	Min Stage > Critical Stage
0317030B	14.70	25	0317030N	0317035N	12.3	78	12.9	126	13.4	167	14.0	226	14.3	247	A	100 Yr	167	247
0318005C	13.70	25	0318005N	0318010N	11.4	78	11.9	105	12.5	136	13.1	165	13.4	183	A	100 Yr	136	183
0318015B	13.66	25	0318015N	0318020N	11.1	66	11.5	81	11.9	103	12.2	116	12.4	127	A	100 Yr	103	127
0318035C	15.10	10	0318035N	0318040N	16.3	26	16.8	26	17.0	27	17.4	28	17.6	29	D	Submerged	305	Min Stage > Critical Stage
0318045C	10.90	10	0318045N	0318055N	12.1	12	12.6	12	12.9	12	13.2	12	13.5	12	D	Submerged	310	Min Stage > Critical Stage
0318055C	11.40	25	0318055N	0321015N	11.0	12	11.1	12	11.2	12	11.3	12	11.4	12	A	100 Yr	12	12
0319010C	12.70	25	0319010N	0319015N	11.8	97	12.9	121	13.5	134	13.9	137	14.2	139	D	Mean	242	116
0319020C	12.90	25	0319020N	0319025N	11.1	84	12.0	104	13.1	137	13.7	147	14.0	151	D	10 Yr	153	132
0319030B	11.30	25	0319030N	0319035N	10.6	82	11.0	100	11.5	123	12.0	141	12.2	154	D	10 Yr	139	116
0319040B	11.70	25	0319040N	0319045N	9.9	98	10.2	122	10.5	163	10.9	253	11.4	302	A	100 Yr	163	302
0319050B	11.00	25	0319050N	0319055N	9.8	98	10.1	123	10.3	163	10.7	235	11.0	286	A	100 Yr	163	286
0321005B	11.00	25	0321005N	0321010N	8.9	219	9.0	249	9.3	324	9.6	424	10.0	502	A	100 Yr	324	502
0321020C	8.60	10	0321020N	0321025N	9.7	28	10.0	28	10.3	29	10.5	29	10.7	29	D	Submerged	302	Min Stage > Critical Stage
P0500	55.00	10	N0500	TWCSXB	56	23	56	23	56	24	56	24	56	24	D	Submerged	161	Min Stage > Critical Stage

Note: 1) Demand for multiple culverts at a single location = the sum of the culvert flow with a portion of the overroad weir flow.
 2) If maximum stage less than critical stage, capacity = maximum flow

Attachment 2

Attachment 2
 Lake Jesup Basin Engineering Study and Drainage Inventory
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 Existing Modeling Scenario

Node	Mean Annual - 24 Hour Design Storm			10 Year - 24 Hour Design Storm			25 Year - 24 Hour Design Storm			50 Year - 24 Hour Design Storm			100 Year - 24 Hour Design Storm		
	Max Stage	Max Inflow	Max Outflow	Max Stage	Max Inflow	Max Outflow	Max Stage	Max Inflow	Max Outflow	Max Stage	Max Inflow	Max Outflow	Max Stage	Max Inflow	Max Outflow
0303015N	48.4	160	109	49.8	212	137	51.1	265	166	52.2	322	196	52.9	366	218
0304005N	48.0	109	109	49.2	137	139	50.2	166	167	50.9	196	197	51.2	218	218
0304010N	42.6	98	12	42.9	141	20	43.4	190	30	43.9	244	35	44.3	286	38
0305005N	44.1	52	6	44.4	74	10	44.7	97	16	45.0	122	24	45.2	141	32
0308005N	47.8	109	110	49.2	139	146	50.2	167	169	50.8	197	197	51.2	218	219
0308010N	47.7	110	110	48.9	146	144	49.8	169	171	50.2	197	208	50.5	219	231
0308015N	47.2	157	157	48.7	193	197	49.7	236	235	50.1	289	283	50.4	323	315
0308020N	42.2	12	12	42.8	20	20	43.3	30	30	43.7	35	35	44.1	38	39
0308025N	42.5	34	32	43.2	42	35	43.5	47	37	43.9	53	40	44.1	55	45
0308027N	41.8	32	32	42.0	35	35	42.1	37	37	42.2	40	40	42.3	41	41
0308028N	39.8	32	32	39.9	35	35	39.9	37	37	40.0	40	40	40.1	41	41
0308030N	39.4	32	32	39.5	35	35	39.5	37	37	39.6	40	40	39.8	45	45
0308035N	38.6	71	73	38.6	88	88	38.8	105	104	39.0	122	122	39.1	136	136
0310005N	37.2	228	386	36.1	301	277	36.4	378	339	36.7	457	413	36.9	517	470
0310015N	31.5	163	43	31.7	232	87	31.9	308	133	32.1	389	208	32.2	452	269
0310016N	29.9	43	45	30.9	87	71	31.6	133	87	31.9	208	93	31.9	269	93
0310017N	29.2	45	39	29.7	71	57	30.0	87	73	30.3	93	79	30.3	93	79
0310020N	27.4	99	39	27.9	139	47	28.1	183	71	28.2	230	76	28.2	266	79
0310025N	25.6	39	40	26.1	47	51	26.1	71	71	26.3	76	82	26.2	79	78
0310030N	21.0	80	79	21.5	99	86	21.6	116	92	21.9	135	122	22.0	157	130
0310035N	19.3	79	79	19.4	86	86	19.5	92	92	19.8	122	122	19.9	130	130
0310038N	12.2	79	70	12.2	86	84	12.2	92	90	12.2	122	107	12.2	130	126
0310045N	16.9	43	43	17.5	61	61	18.2	80	80	19.1	101	97	19.6	117	113
0310050N	15.0	45	43	15.1	66	64	15.1	86	81	15.2	119	116	15.2	140	136
0310055N	7.5	316	305	7.6	421	407	7.7	528	511	7.8	650	632	7.8	744	724
0310060N	24.7	421	192	25.0	328	259	25.2	405	362	25.6	497	444	25.8	568	518
0310065N	22.5	192	192	22.6	259	259	22.9	362	352	23.0	444	443	23.1	518	518
0311003N	46.8	157	157	48.0	197	193	48.7	235	235	49.3	283	283	49.6	315	315
0311005N	46.5	157	157	47.5	193	190	47.9	235	234	48.1	283	283	48.3	315	315
0311010N	46.4	157	157	47.4	190	206	47.8	234	233	48.1	283	283	48.2	315	315
0311015N	46.1	157	157	46.6	206	190	47.0	209	193	47.3	206	193	47.5	209	193
0311020N	45.4	166	166	45.6	205	205	45.8	241	241	46.0	295	295	46.1	327	327
0312010N	34.5	193	192	35.1	251	249	35.6	305	302	36.1	357	350	36.5	394	386
0313001N	26.1	325	355	27.4	447	401	28.8	573	452	29.8	699	524	30.3	796	587
0313010N	21.6	118	32	22.6	166	47	23.5	218	57	24.4	273	82	25.0	315	104
0314015N	21.6	340	337	21.8	454	456	21.9	539	546	22.0	641	642	22.0	733	735
0315005N	27.4	147	20	27.9	198	42	28.5	253	69	29.0	312	90	29.5	357	102
0315010N	23.9	20	18	24.7	42	31	25.5	69	35	25.7	90	59	25.9	102	75
0315015N	22.7	39	37	23.0	48	48	23.2	62	62	23.6	77	74	24.0	96	93
0316005N	19.2	337	329	19.7	456	450	19.8	546	545	19.9	642	641	20.1	735	733
0316010N	18.9	207	207	19.2	291	291	19.4	359	357	19.6	437	436	19.7	501	501
0316015N	17.7	207	206	18.3	291	291	18.6	357	357	18.7	436	437	18.8	501	501
0316020N	17.3	206	206	17.8	291	291	18.0	357	357	18.2	437	436	18.4	501	501
0316030N	16.5	294	249	16.8	429	406	17.0	522	505	17.2	626	608	17.3	717	703
0316040N	16.4	185	179	16.8	292	280	17.0	352	344	17.2	414	405	17.3	469	461
0316045N	14.6	179	179	15.0	280	280	15.2	344	344	15.5	405	405	15.7	461	461
0316050N	14.6	179	166	15.0	280	252	15.2	344	319	15.5	405	379	15.7	461	434
0316055N	14.6	166	166	14.9	252	252	15.1	319	319	15.5	379	379	15.7	434	434
0316060N	14.6	166	158	14.9	252	241	15.1	319	307	15.5	379	367	15.7	434	421

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Node	Mean Annual - 24 Hour Design Storm			10 Year - 24 Hour Design Storm			25 Year - 24 Hour Design Storm			50 Year - 24 Hour Design Storm			100 Year - 24 Hour Design Storm		
	Max Stage	Max Inflow	Max Outflow	Max Stage	Max Inflow	Max Outflow	Max Stage	Max Inflow	Max Outflow	Max Stage	Max Inflow	Max Outflow	Max Stage	Max Inflow	Max Outflow
0316065N	14.1	158	158	14.6	241	241	15.0	307	307	15.4	367	367	15.7	421	421
0316070N	14.1	240	113	14.6	368	185	15.0	477	261	15.4	592	352	15.7	688	418
0317005N	17.4	124	114	17.6	159	150	17.7	188	174	17.8	205	198	17.9	232	224
0317010N	17.3	114	105	17.5	150	144	17.7	174	170	17.8	198	195	17.9	224	221
0317020N	17.1	105	105	17.4	144	144	17.5	170	170	17.6	195	195	17.7	221	221
0317025N	14.7	67	67	14.8	119	119	15.0	157	163	15.0	200	271	15.1	240	317
0317030N	12.1	67	66	12.7	119	113	13.2	163	154	13.8	271	210	14.2	317	233
0317035N	12.1	82	73	12.6	140	111	13.1	188	150	13.7	247	193	14.0	292	221
0318005N	11.1	73	70	11.7	111	94	12.3	150	126	12.9	193	157	13.3	221	177
0318010N	10.9	70	70	11.4	94	94	11.7	126	126	12.1	157	157	12.3	177	177
0318015N	10.9	70	60	11.4	94	74	11.7	126	97	12.1	157	114	12.3	177	124
0318020N	10.9	60	62	11.4	74	78	11.7	97	94	12.1	114	110	12.3	124	121
0318030N	10.8	106	106	11.2	133	133	11.5	164	159	11.9	204	196	12.1	229	222
0318035N	16.3	192	192	16.6	259	255	16.9	352	350	17.3	443	439	17.5	518	512
0318040N	14.4	210	265	14.4	283	282	14.5	395	394	14.6	496	496	14.6	581	580
0318045N	12.1	265	197	12.4	282	270	12.8	394	370	13.1	496	470	13.4	580	551
0318055N	11.0	13	13	11.1	12	12	11.2	13	13	11.3	12	12	11.4	12	12
0319005N	11.5	113	113	12.6	185	185	13.3	261	261	13.8	352	352	14.1	418	418
0319010N	11.5	113	87	12.6	185	114	13.3	261	169	13.8	352	254	14.1	418	325
0319015N	10.8	87	87	11.7	114	114	12.8	169	169	13.5	254	254	13.8	325	325
0319020N	10.8	87	76	11.7	114	97	12.8	169	128	13.5	254	221	13.8	325	294
0319025N	10.5	76	73	11.0	97	94	11.4	128	124	11.9	221	200	12.1	294	266
0319030N	10.4	73	72	10.9	94	93	11.4	124	122	11.8	200	191	12.1	266	255
0319035N	10.4	92	90	10.8	117	116	11.2	151	149	11.6	235	224	11.9	313	289
0319040N	9.8	90	90	10.1	116	116	10.4	149	149	10.8	224	222	11.2	289	282
0319045N	9.7	90	90	10.1	116	116	10.3	149	149	10.6	222	218	10.9	282	274
0319050N	9.6	90	90	10.0	116	118	10.2	149	149	10.5	218	215	10.9	274	268
0319055N	9.6	179	180	10.0	233	232	10.1	297	296	10.4	398	392	10.7	473	465
0319060N	10.1	106	101	10.3	133	129	10.4	159	157	10.6	196	191	10.7	222	210
0320005N	4.8	385	385	4.8	522	522	4.8	692	691	4.8	852	851	4.8	976	975
0321005N	8.8	180	196	9.0	232	233	9.2	296	296	9.5	392	392	9.8	465	464
0321010N	8.7	196	190	8.9	233	234	9.0	296	296	9.1	392	392	9.3	464	464
0321015N	11.0	197	192	11.1	270	265	11.2	370	365	11.3	470	463	11.4	551	544
0321020N	9.7	192	184	9.9	265	257	10.2	365	354	10.5	463	450	10.7	544	530
0321025N	8.7	184	184	8.9	257	257	9.0	354	354	9.1	450	450	9.2	530	530
0321030N	8.7	336	287	8.9	452	388	9.0	572	508	9.1	690	626	9.2	782	717

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 Lake Jesup Basin Engineering Study and Drainage Inventory
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Node	Mean Annual - 24 Hour Design Storm			10 Year - 24 Hour Design Storm			25 Year - 24 Hour Design Storm			50 Year - 24 Hour Design Storm			100 Year - 24 Hour Design Storm		
	Max Stage	Max Inflow	Max Outflow	Max Stage	Max Inflow	Max Outflow	Max Stage	Max Inflow	Max Outflow	Max Stage	Max Inflow	Max Outflow	Max Stage	Max Inflow	Max Outflow
0303015N	48.7	169	118	50.1	221	147	51.4	273	173	52.4	331	202	53.0	375	223
0304005N	48.2	118	119	49.4	147	150	50.4	173	175	51.0	202	203	51.3	223	224
0304010N	42.7	109	13	43.0	155	22	43.5	205	32	44.0	260	36	44.3	302	42
0305005N	44.1	52	6	44.4	74	10	44.7	97	16	45.0	122	26	45.2	141	33
0308005N	48.0	119	119	49.4	150	153	50.3	175	176	51.0	203	204	51.3	224	224
0308010N	47.9	119	120	49.1	153	157	49.9	176	179	50.3	204	216	50.5	224	236
0308015N	47.4	176	176	48.9	214	217	49.8	253	252	50.2	307	298	50.4	345	330
0308020N	42.3	13	13	43.0	22	22	43.5	32	32	43.9	36	36	44.2	42	42
0308025N	42.9	38	34	43.3	44	36	43.7	50	38	44.0	54	41	44.1	56	50
0308027N	41.9	34	34	42.0	36	36	42.1	38	38	42.3	41	41	42.3	42	42
0308028N	39.8	34	34	39.9	36	36	40.0	38	38	40.0	41	41	40.2	42	42
0308030N	39.5	34	34	39.5	36	36	39.6	38	38	39.7	41	41	39.9	50	50
0308035N	38.5	76	76	38.6	92	92	38.8	109	108	39.0	126	126	39.2	144	144
0310005N	35.8	253	229	36.1	325	292	36.4	400	360	36.7	478	433	36.9	538	491
0310015N	31.6	199	60	31.8	271	110	32.0	348	169	32.2	430	250	32.3	492	310
0310016N	30.3	60	57	31.3	110	79	31.8	169	90	31.9	250	92	32.0	310	95
0310017N	29.4	57	46	29.9	79	65	30.1	90	77	30.3	92	79	30.3	95	79
0310020N	27.6	119	41	28.0	160	59	28.2	205	76	28.2	251	78	28.2	285	82
0310025N	25.6	41	42	26.1	59	59	26.3	76	82	26.2	78	79	26.2	82	84
0310030N	21.2	84	81	21.5	103	87	21.6	120	95	21.9	143	126	22.0	167	136
0310035N	19.3	81	81	19.4	87	87	19.5	95	95	19.9	126	126	20.0	136	136
0310038N	12.2	81	74	12.2	87	85	12.2	95	93	12.2	126	119	12.2	136	132
0310045N	17.1	49	49	17.7	68	67	18.5	87	86	19.4	107	102	19.7	123	120
0310050N	15.1	53	50	15.1	74	71	15.1	94	92	15.2	128	124	15.2	150	146
0310055N	7.5	332	320	7.6	437	422	7.7	543	527	7.8	668	649	7.8	762	741
0310060N	24.7	270	193	25.1	348	359	25.3	434	375	25.6	525	473	25.8	595	549
0310065N	22.5	193	193	22.8	359	310	22.9	375	375	23.0	473	472	23.1	549	548
0311003N	46.9	176	176	48.0	217	211	48.8	252	252	49.4	298	298	49.7	330	330
0311005N	46.5	176	176	47.5	211	206	47.9	252	251	48.1	298	297	48.3	330	330
0311010N	46.2	176	210	47.4	206	223	47.8	251	250	48.1	297	297	48.2	330	330
0311015N	45.9	210	176	46.5	223	205	46.8	223	214	47.1	221	215	47.3	222	215
0311020N	44.9	186	186	45.3	227	227	45.5	260	260	45.7	311	311	45.8	343	343
0312010N	34.7	216	214	35.3	275	273	35.9	335	333	36.5	399	387	36.8	435	423
0313001N	26.3	371	366	28.1	498	427	29.4	628	484	30.2	766	568	30.7	862	629
0313010N	21.7	111	28	22.5	159	44	23.4	211	55	24.3	266	79	25.0	308	101
0314015N	21.6	347	356	21.8	479	482	21.9	568	569	22.0	682	683	22.1	773	774
0315005N	27.7	170	32	28.2	221	58	28.8	276	81	29.4	333	99	29.8	377	109
0315010N	24.2	32	28	25.1	58	34	25.6	81	49	25.8	99	72	25.9	109	83
0315015N	22.9	42	42	23.1	55	55	23.3	67	83	23.6	91	111	24.1	107	152
0316005N	19.3	356	349	19.7	482	486	19.8	569	568	20.0	683	682	20.1	774	773
0316010N	18.9	225	225	19.3	321	320	19.5	382	381	19.7	466	466	19.8	528	528
0316015N	17.9	225	225	18.4	320	320	18.7	381	381	18.8	466	466	18.8	528	565
0316020N	17.5	225	224	17.9	320	319	18.1	381	381	18.3	466	465	18.5	565	529
0316030N	16.6	327	295	16.9	461	437	17.0	552	532	17.2	666	649	17.3	756	743
0316040N	16.6	224	207	16.9	311	302	17.0	369	360	17.2	438	429	17.3	492	484
0316045N	14.7	207	207	15.1	302	302	15.3	360	360	15.6	429	429	15.9	484	484
0316050N	14.7	207	192	15.1	302	280	15.3	360	339	15.6	429	403	15.9	484	455
0316055N	14.7	192	192	15.0	280	280	15.2	339	339	15.6	403	403	15.8	455	455
0316060N	14.7	192	183	15.0	280	269	15.2	339	328	15.6	403	390	15.8	455	442

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 Subbasin 05-03 Update
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Node	Mean Annual - 24 Hour Design Storm			10 Year - 24 Hour Design Storm			25 Year - 24 Hour Design Storm			50 Year - 24 Hour Design Storm			100 Year - 24 Hour Design Storm		
	Max Stage	Max Inflow	Max Outflow	Max Stage	Max Inflow	Max Outflow	Max Stage	Max Inflow	Max Outflow	Max Stage	Max Inflow	Max Outflow	Max Stage	Max Inflow	Max Outflow
0316065N	14.3	183	183	14.7	269	269	15.2	328	328	15.5	390	390	15.8	442	442
0316070N	14.3	281	136	14.7	404	208	15.2	511	293	15.5	634	382	15.8	729	449
0317005N	17.4	126	115	17.6	166	156	17.7	189	180	17.8	216	209	17.9	245	237
0317010N	17.4	115	112	17.6	156	154	17.7	180	177	17.8	209	206	17.9	237	234
0317020N	17.2	112	112	17.4	154	154	17.5	177	177	17.7	206	206	17.8	234	234
0317025N	14.7	80	91	14.9	132	132	15.0	170	182	15.1	217	288	15.1	256	356
0317030N	12.3	91	78	12.9	132	126	13.4	182	167	14.0	288	226	14.3	356	247
0317035N	12.2	100	84	12.8	154	124	13.3	206	164	13.8	266	206	14.1	311	229
0318005N	11.4	84	78	11.9	124	105	12.5	164	136	13.1	206	165	13.4	229	183
0318010N	11.1	78	78	11.5	105	105	11.9	136	136	12.2	165	165	12.4	183	183
0318015N	11.1	78	66	11.5	105	81	11.9	136	103	12.2	165	116	12.4	183	127
0318020N	11.1	66	69	11.5	81	82	11.9	103	99	12.2	116	114	12.4	127	128
0318030N	11.0	113	113	11.3	142	142	11.7	182	175	12.0	229	206	12.2	297	247
0318035N	16.3	193	193	16.8	310	304	17.0	375	373	17.4	472	468	17.6	548	542
0318040N	14.4	212	265	14.5	337	336	14.5	419	419	14.6	528	528	14.6	614	613
0318045N	12.1	265	202	12.6	336	307	12.9	419	395	13.2	528	500	13.5	613	584
0318055N	11.0	12	12	11.1	12	12	11.2	12	12	11.3	12	12	11.4	12	12
0319005N	11.8	136	136	12.9	208	208	13.5	293	293	13.9	382	382	14.2	449	449
0319010N	11.8	136	97	12.9	208	123	13.5	293	196	13.9	382	283	14.2	449	355
0319015N	11.1	97	97	12.0	123	123	13.1	196	196	13.7	283	283	14.0	355	355
0319020N	11.1	97	84	12.0	123	104	13.1	196	153	13.7	283	252	14.0	355	325
0319025N	10.6	84	81	11.1	104	101	11.5	153	142	12.0	252	227	12.2	325	295
0319030N	10.6	81	82	11.0	101	100	11.5	142	137	12.0	227	217	12.2	295	283
0319035N	10.5	99	98	10.9	124	122	11.3	169	163	11.7	266	251	12.0	346	312
0319040N	9.9	98	98	10.2	122	122	10.5	163	163	10.9	251	253	11.4	312	302
0319045N	9.9	98	98	10.2	122	122	10.4	163	163	10.7	253	242	11.0	302	292
0319050N	9.8	98	98	10.1	122	123	10.3	163	163	10.7	242	235	11.0	292	286
0319055N	9.7	195	194	10.0	249	249	10.2	327	324	10.5	433	424	10.8	509	594
0319060N	10.2	113	110	10.4	142	138	10.5	175	172	10.6	206	200	10.8	247	225
0320005N	4.8	409	409	4.8	572	572	4.8	728	728	4.8	892	890	4.8	1026	1023
0321005N	8.9	194	219	9.0	249	249	9.3	324	324	9.6	424	424	10.0	594	502
0321010N	8.8	219	200	8.9	249	250	9.0	324	325	9.2	424	424	9.4	502	502
0321015N	11.0	202	197	11.1	307	302	11.2	395	389	11.3	500	493	11.4	584	577
0321020N	9.7	197	193	10.0	302	293	10.3	389	378	10.5	493	480	10.7	577	561
0321025N	8.8	193	193	8.9	293	293	9.0	378	378	9.1	480	480	9.2	561	561
0321030N	8.8	364	301	8.9	493	429	9.0	603	539	9.1	724	660	9.2	819	754