GENERAL NOTES:

- 1. IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. ANY CONSTRUCTION OBSERVATION BY THE ENGINEER OF THE CONTRACTOR'S PERFORMANCE IS NOT INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES, IN, ON OR NEAR THE CONSTRUCTION SITE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR RAZING AND REMOVAL OF THE EXISTING STRUCTURES, RELATED UTILITIES, PAVING, AND ANY OTHER EXISTING IMPROVEMENTS AS NOTED. REF. SITE WORK SPECIFICATIONS.
- CONTRACTOR IS TO REMOVE AND DISPOSE OF ALL DEBRIS, RUBBISH AND OTHER MATERIALS RESULTING FROM PREVIOUS AND CURRENT DEMOLITION OPERATIONS. DISPOSAL WILL BE IN ACCORDANCE WITH ALL LOCAL, STATE AND/OR FEDERAL REGULATIONS GOVERNING SUCH OPERATIONS.
- 4. THE GENERAL CONTRACTOR WILL BE HELD SOLELY RESPONSIBLE FOR AND SHALL TAKE ALL PRECAUTIONS NECESSARY TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES DURING THE CONSTRUCTION PHASES OF THIS PROJECT
- ALL CONSTRUCTION IN STATE HIGHWAY DEPARTMENT RIGHT-OF-WAY SHALL BE COORDINATED WITH THE HIGHWAY DEPARTMENT RESIDENT MAINTENANCE ENGINEER AS DIRECTED ON THE TXDOT PERMIT. CURRENT SPECIFICATIONS ADOPTED BY TXDOT SHALL GOVERN ON THIS PROJECT.
- ALL SITE WORK FOR THIS PROJECT SHALL MEET OR EXCEED THE SPECIFICATIONS OF THE RELEVANT UTILITY COMPANY OR REGULATORY AUTHORITY, AND THE SPECIFICATIONS FOR THE CONSTRUCTION OF THE EXISTING IMPROVEMENTS WHICH ARE BEING ALTERED OR REPLACED CONTRACTOR SHALL CONTACT THE ENGINEER FOR SPECIFICATION SECTIONS FOR ITEMS SUCH AS LANDSCAPING AND IRRIGATION THAT ARE AFFECTED BY THE WORK BUT NOT COMPLETELY DETAILED OR SPECIFIED ON THESE PLANS.
- TOPOGRAPHIC AND BOUNDARY SURVEY PROVIDED BY HINE-THOMPSON SURVEYING, 508 CRESTRIDGE ROAD, HEATH, TX 75032 PHONE: (214) 498-8757
- 8. UNDERGROUND UTILITIES SHOWN ARE BASED ON A COMBINATION OF FIELD SURVEY DATA, AVAILABLE UTILITY MAPS, AND MARKED LOCATIONS BY UTILITY OWNERS. THE UTILITIES SHOWN MAY NOT REFLECT ALL UNDERGROUND UTILITIES IN THIS AREA. PRIOR TO ANY CONSTRUCTION THE CONTRACTOR SHALL FIELD VERIFY ALL HORIZONTAL AND VERTICAL LOCATIONS, PRIOR TO ANY CONSTRUCTION, PARTICULARLY WHERE CONNECTIONS ARE CRITICAL.
- 9. A TRENCH SAFETY PLAN IS REQUIRED FOR ALL TRENCHING OPERATIONS. THE CONTRACTOR SHALL PROVIDE A COPY OF THE TRENCH SAFETY PLAN TO THE CITY FOR APPROVAL. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE TRENCH SAFETY PLAN MEETS ALL STATE AND FEDERAL GUIDELINES IMPLEMENTATION AND COMPLIANCE WITH THE TRENCH SAFETY PLAN IS THE RESPONSIBILITY OF THE CONTRACTOR.
- NCTCOG 105.1.6 ERRORS AND CORRECTIONS IN DRAWINGS AND SPECIFICATIONS THE ENGINEER SHALL BE PERMITTED TO MAKE SUCH CORRECTIONS OR INTERPRETATIONS AS MAY BE NECESSARY FOR THE FULFILLMENT OF THE INTENT OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL NOT TAKE ADVANTAGE OF ANY APPARENT ERRORS, OMISSIONS OR DISCREPANCIES IN THE DRAWINGS OR SPECIFICATIONS. IN CASE OF ANY ERRORS, OMISSIONS OR DISCREPANCIES IN THE DRAWINGS OR SPECIFICATIONS, THE CONTRACTOR SHALL PROMPTLY SUBMIT THE MATTER TO THE OWNER WHO. IN TURN. SHALL PROMPTLY MAKE A DETERMINATION AND ISSUE THE NECESSARY INSTRUCTIONS IN WRITING. ANY ADJUSTMENT BY THE CONTRACTOR WITHOUT THIS DETERMINATION AND INSTRUCTIONS SHALL BE AT THE CONTRACTOR'S OWN RISK AND EXPENSE. THE WORK IS TO BE MADE COMPLETE AS INTENDED BY THE CONTRACT DOCUMENTS.

WETLAND NOTICE:

ANY DEVELOPMENT, EXCAVATION, CONSTRUCTION, OR FILLING IN A U.S. CORPS OF ENGINEERS DESIGNATED WETLAND IS SUBJECT TO LOCAL, STATE AND FEDERAL APPROVALS. THE CONTRACTOR SHALL COMPLY WITH ALL PERMIT REQUIREMENTS AND/OR RESTRICTIONS AND ANY VIOLATION WILL BE SUBJECT TO FEDERAL PENALTY. THE CONTRACTOR SHALL HOLD THE OWNER/ DEVELOPER, THE ENGINEER AND THE LOCAL GOVERNING AGENCIES HARMLESS AGAINST SUCH VIOLATION.

WARRANTY/DISCLAIMER:

THE DESIGNS REPRESENTED IN THESE PLANS ARE IN ACCORDANCE WITH ESTABLISHED PRACTICES OF CIVIL ENGINEERING FOR THE DESIGN FUNCTIONS AND USES INTENDED BY THE OWNER AT THIS TIME. HOWEVER, NEITHER THE ENGINEER NOR ITS PERSONNEL CAN OR DO WARRANT THESE DESIGNS OR PLANS AS CONSTRUCTED EXCEPT IN THE SPECIFIC CASES WHERE THE ENGINEER INSPECTS AND CONTROLS THE PHYSICAL CONSTRUCTION ON A CONTEMPORARY BASIS AT THE SITE.



EXISTING UTILITIES & UNDERGROUND UTILITIES EXISTING UTILITIES AND UNDERGROUND FACILITIES INDICATED ON THESE PLANS HAVE BEEN LOCATED FROM REFERENCE INFORMATION SUPPLIED BY THE VARIOUS OWNERS OF THE FACILITIES. THE ENGINEER DOES NOT ACCEPT THE RESPONSIBILITY FOR THE UTILITY LOCATIONS SHOWN. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY BOTH HORIZONTALLY AND VERTICALLY THE LOCATION OF ALL EXISTING UTILITIES AND UNDERGROUND FACILITIES PRIOR TO CONSTRUCTION, TO TAKE NECESSAR' PRECAUTIONS IN ORDER TO PROTECT ALL FACILITIES ENCOUNTERED, AND TO NOTIFY THE ENGINEER PROMPTLY OF ALL CONFLICTS OF THE WORK WITH EXISTING FACILITIES. THE CONTRACTOR SHALL PRESERVE AND PROTECT ALL EXISTING FACILITIES FROM DAMAGE DURING CONSTRUCTION. ANY DAMAGE BY THE CONTRACTOR TO EXISTING UTILITIES SHALL BE REPAIRED BY THE CONTRACTOR AT HIS/HER EXPENSE.

CAUTION!!!

CONSTRUCTION DOCUMENTS FOR NEW CASTLE ESTATES ADDITION TO THE CITY OF LUCAS COLLIN COUNTY, TEXAS

18 ACRES

A PLAT OF PART OF THE JAMES GRAYUM SURVEY, ABSTRACT 354 CITY OF LUCAS, COLLIN COUNTY, TEXAS



VICINITY MAP 1"=1000'



INDEX OF SHEETS



December 08, 2021 DATE:

THIS RECORD DRAWING HEREIN REFLECTS TO THE BEST OF THE DESIGN ENGINEER'S KNOWLEDGE THE APPROXIMATE LOCATION OF THE CONSTRUCTED WORK USING INFORMATION PROVIDED BY THE CONTRACTOR(S).



, LLC OURT 034 Ö S C S ш шァ \vdash ΜΔ ST \mathbb{Z} ш RA | OR CO \triangleleft N U X D P R **–** 6 – 59



GENERAL CONSTRUCTION NOTES

- 1. ALL MATERIAL AND CONSTRUCTION SHALL CONFORM TO THE CITY DESIGN STANDARDS. IF NO CITY STANDARD IS AVAILABLE, MATERIAL AND CONSTRUCTION SHALL CONFORM TO THE "NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
- 2. THE CONTRACTOR SHALL BE RESPONSIBLE TO FURNISH ALL MATERIALS, LABOR AND EQUIPMENT TO CONSTRUCT THE FACILITY AS SHOWN AND DESCRIBED IN THE CONSTRUCTION DOCUMENTS IN ACCORDANCE WITH THE APPROPRIATE APPROVING AUTHORITIES, SPECIFICATIONS AND REQUIREMENTS. ALL ITEMS DESCRIBED IN THE PLANS, SPECIFICATIONS OR THE PROJECT NOTES IN THE PLANS SHALL BE INCLUDED IN THE CONTRACTOR'S BASE BID. NO EXTRA PAY WILL BE GIVEN UNLESS AN ITEM IS SPECIFICALLY DESCRIBED IN THE PLANS OR CONTRACT DOCUMENTS AS "PAY BY OWNER". ALL WORK SHALL BE CONDUCTED IN CONFORMANCE WITH CURRENT SAFETY CODES AND STANDARDS WITH JURISDICTION OVER THIS PROJECT.
- 3. THE CONTRACTOR SHALL CONTACT ALL FRANCHISE UTILITY COMPANIES TO HAVE THEM LOCATE EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE THE EXACT LOCATION AND DEPTH OF ALL FRANCHISE UTILITY SERVICES AND ANY REQUIRED RELOCATION AND/OR EXTENSION. SERVICES SHOWN ON THE PLANS, IF ANY, ARE CONCEPTUAL.
- 4. THE CONTRACTOR SHALL PROTECT ALL PUBLIC AND PRIVATE UTILITIES IN THE CONSTRUCTION OF THIS PROJECT. ALL MANHOLES, CLEANOUTS, VALVE BOXES, POWER POLES, SIGNS, FIRE HYDRANTS, ETC., MUST BE ADJUSTED TO PROPER GRADE BY THE CONTRACTOR PRIOR TO AND AFTER PLACING OF PERMANENT PAVING. UTILITIES MUST BE MAINTAINED TO PROPER LINE AND GRADE DURING CONSTRUCTION OF THE PAVING FOR THIS PROJECT.
- BRACING OF UTILITY POLES MY BE REQUIRED BY UTILITY COMPANIES WHEN TRENCHING OR EXCAVATION IS IN CLOSE PROXIMITY TO THE POLES. THE COST OF BRACING POLES WILL BE BORNE BY THE CONTRACTOR. THERE IS NO SEPARATE PAY ITEM FOR THIS WORK. THE COST IS INCIDENTAL TO THE VARIOUS PAY ITEMS FOR INSTALLATION OF PIPE.
- 6. THE LOCATIONS, ELEVATIONS AND DIMENSIONS OF EXISTING UTILITIES SHOWN ON THE PLANS WERE OBTAINED FROM AVAILABLE RECORDS AND RE CONSIDERED APPROXIMATE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY LOCATIONS, ELEVATIONS AND DIMENSIONS OF ADJACENT AND/OR CONFLICTING UTILITIES SUFFICIENTLY IN ADVANCE OF CONSTRUCTION IN ORDER THAT ADJUSTMENTS CAN BE MADE TO PROVIDE ADEQUATE CLEARANCES. THE CONTRACTOR SHALL PRESERVE AND PROTECT PUBLIC UTILITIES AT ALL TIMES DURING CONSTRUCTION. ANY DAMAGE TO UTILITIES RESULTING FROM CONTRACTOR'S OPERATIONS SHALL BE RESTORED AT THE CONTRACTOR'S EXPENSE. THE ENGINEER SHALL BE NOTIFIED WHEN PROPOSED FACILITY GRADES CONFLICT WITH EXISTING UTILITY GRADE
- 7. THE CONTRACTOR SHALL IMMEDIATELY REPAIR OR REPLACE ANY PHYSICAL DAMAGE TO PRIVATE PROPERTY, INCLUDING, BUT NOT LIMITED TO FENCES, WALLS, PAVEMENT, GRASS, TREES, AND LAWN SPRINKLES AND IRRIGATIONS SYSTEMS AT NO COST TO THE OWNER. THIS WORK SHALL BE SUBSIDIARY TO THE CONTRACT (UNLESS OTHERWISE NOTED) AND IS NOT A SEPARATE PAY ITEM.
- 8. THE CONTRACTOR SHALL REMOVE SURPLUS MATERIAL FROM THE PROJECT AREA. THIS WORK SHALL BE SUBSIDIARY TO THE CONTRACT AND IS NOT A SEPARATE PAY ITEM
- 9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO CONSTRUCTION.
- 10. THE CONTRACTOR SHALL HAVE AVAILABLE AT THE JOB SITE AT ALL TIMES A COPY OF THE CONTRACT DOCUMENTS INCLUDING PLANS, SPECIFICATIONS, AND SPECIAL CONDITIONS, COPIES OF ANY REQUIRED CONSTRUCTION PERMITS. EROSION CONTROL PLANS SWPPP AND INSPECTION REPORTS.
- 11. ANY DISCREPANCIES ON THE DRAWINGS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OWNER AND THE ENGINEER BEFORE COMMENCING WORK. NO FIELD CHANGES OR DEVIATIONS FROM DESIGN SHALL BE MADE WITHOUT PRIOR APPROVAL OF THE OWNER AND NOTIFICATION TO THE ENGINEER. NO CONSIDERATION WILL BE GIVEN TO CHANGE ORDERS WHICH THE OWNER AND ENGINEER WERE NOT CONTACTED PRIOR TO CONSTRUCTION OF THE AFFECTED ITEM.
- 12. ALL COPIES OF THE COMPACTION, CONCRETE AND OTHER REQUIRED TEST RESULTS SHALL BE SENT TO THE CITY INSPECTOR, CIVIL ENGINEER, CONTRACTOR AND OWNER DIRECTLY FROM THE TESTING AGENCY.
- 13. ALL NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES, JURISDICTIONAL AGENCIES AND/OR UTILITY SERVICE COMPANIES SHALL BE OBTAINED BY THE CONTRACTOR PRIOR TO BUILDING POSSESSION AND THE FINAL CONNECTION OF SERVICES.
- 14. CONTRACTOR SHALL VERIFY BENCHMARKS AND DATUM PRIOR TO COMMENCING CONSTRUCTION OR STAKING IMPROVEMENTS.
- 15. CONTRACTOR SHALL THOROUGHLY CHECK COORDINATION OF CIVIL, LANDSCAPE, MEP, ARCHITECTURAL AND OTHER PLANS PRIOR TO COMMENCING CONSTRUCTION. OWNER AND ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCY PRIOR TO COMMENCING CONSTRUCTION.
- 16. ALL HORIZONTAL DIMENSIONS GIVEN ARE TO BACK OF CURB AND TO PIPE CENTERLINES UNLESS OTHERWISE NOTED ON PLANS.
- 17. ALL CUT OR FILL SLOPES SHALL BE 3:1 OR FLATTER UNLESS OTHERWISE SHOWN
- 18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTROL OF DUST AND DIRT RISING AND SCATTERING IN THE AIR DURING CONSTRUCTION AND SHALL PROVIDE AFTER SPRINKLING OR OTHER SUITABLE METHODS OF CONTROL. THE CONTRACTOR SHALL COMPLY WITH ALL GOVERNING REGULATIONS PERTAINING TO ENVIRONMENTAL PROTECTION.
- 19. UPON COMPLETION OF CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE THE CIVIL ENGINEER A COPY OF RECORD DRAWINGS IDENTIFYING ALL DEVIATIONS OR VARIATIONS FROM THE ORIGINAL PLANS.
- 20. THE CONTRACTOR SHALL GIVE NOTICE TO ALL AFFECTED PARTIES AND ALL AUTHORIZED INSPECTORS SUPERINTENDENTS OR PERSON IN CHARGE OF PRIVATE OR PUBLIC UTILITIES OR RAILROADS AFFECTED BY HIS OPERATIONS. AT LEAST 48 HOURS PRIOR TO COMMENCEMENT OF WORK.
- 21. IT IS THE INTENT OF THE CONTRACT DOCUMENTS TO PROVIDE AN INSTALLATION COMPLETE IN EVERY RESPECT. IF THE CONTRACT DOCUMENTS DO NOT SUFFICIENTLY DESCRIBE THE FINAL PRODUCT, THE CONTRACTOR SHALL BRING SUCH TO THE ATTENTION OF THE ENGINEER, UNLESS OTHERWISE SPECIFIED, IT IS THE CONTRACTORS RESPONSIBILITY FOR METHODOLOGY OF CONSTRUCTION TO COMPLETE WORK INDICATED OR SPECIFIED. CONTRACTORS IS TO PROVIDE SAME AND PROVIDE MATERIALS AND EQUIPMENT USUALLY FURNISHED WITH SUCH SYSTEMS OR REQUIRED TO COMPLETE THE INSTALLATION, WHETHER SPECIFICALLY MENTIONED OR NOT.
- 22. CONTRACTOR SHALL COMPLY WITH ALL OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) STANDARDS AND REGULATIONS, AS WELL AS ANY OTHER APPLICABLE FEDERAL, STATE OR LOCAL HEALTH AND SAFETY STANDARD, LAWS OR REGULATIONS. FAILURE TO COMPLY WITH THE REQUIREMENTS SPECIFIED SHALL BE CONSIDERED JUST AND SUFFICIENT CAUSE FOR OWNER TO STOP WORK.
- 23. CONTRACTOR SHALL COMPLY WITH TEXAS HOUSE BILL 1569, EFFECTIVE SEPTEMBER 1, 1989, TO MAINTAIN A VIABLE TRENCH SAFETY SYSTEM AT ALL TIMES AS WELL AS THE U.S. DEPARTMENT OF LABOR, OSHA, "CONT. SAFETY AND HEALTH REGULATIONS", VOL. 29 SUB PART P, AND AMENDMENTS THERETO SHEETING, SHORING, BRACING AND OTHER TRENCH SAFETY COSTS SHALL BE SUBSIDIARY TO THE COST OF CONSTRUCTION 9 NO EXTRA PAY).
- 24. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PUBLIC IMPROVEMENT BONDING AND SURETIES PER CITY REGULATIONS.

- SERVICES.

TRAFFIC CONTROL NOTES

- TEXAS.

WATER AND SANITARY SEWER NOTE

- 42″
- WATER MAINS.
- ABOVE GRADE.

- (SHEET 18).
- OWNER.

GAS, ELECTRIC, TELEPHONE NOTES

1. CONTRACTOR SHALL CONTACT FRANCHISE UTILITY COMPANIES PRIOR TO CONSTRUCTION, IN ORDER TO LOCATE AND/OR DISCONNECT EXISTING SERVICES, AND TO COORDINATE NEW SERVICE.

2. ANY PROPOSED FRANCHISE UTILITY LOCATIONS SHOWN ON THESE DRAWINGS ARE CONCEPTUAL ONLY. THE CONTRACTOR SHALL COORDINATE THE EXACT DESIGN, ALIGNMENT, INSTALLATION REQUIREMENTS AND COST SHARING ARRANGEMENTS WITH THE INDIVIDUAL UTILITY PROVIDERS AND THE PROJECT OWNER. THE CONTRACTOR SHALL INCLUDE IN THE BASE BID, ALL ASSOCIATED COSTS TO INSTALL FRANCHISE UTILITY (GAS, ELEC, PHONE, CABLE) SERVICE TO THE PROPOSED BUILDING. THE CONTRACTOR SHALL ESTABLISH ADEQUATE LEAD TIME IN THEIR CONSTRUCTION SCHEDULE FOR COORDINATING AND PROCURING FRANCHISE UTILITY

CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL PLANS, AT LEAST 48 HOURS PRIOR TO ANY WORK IN A PUBLIC RIGHT-OF-WAY, SEALED AND SIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF

2. ALL TRAFFIC CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFICE CONTROL DEVICES (TMUTCD), LATEST VERSION.

3. THE CONTRACTOR SHALL COVER EXISTING SIGNS AND OBLITERATE EXISTING PAVEMENT MARKINGS THAT CONFLICT WITH THE INTENT OF TRAFFIC CONTROL PLANS TO AVOID CONFUSION TO THE TRAVELING PUBLIC.

4. ALL TEMPORARY SIGNS, BARRICADES, WARNING LIGHTS AND OTHER MISCELLANEOUS TRAFFIC CONTROL MEASURES SHALL BE REMOVED AND ORIGINAL PERMANENT TRAFFIC CONTROL MEASURES, SIGNS AND PAVEMENT MARKINGS REPLACED AT THE END OF THE CONTRACTOR'S CONSTRUCTION OPERATIONS.

5. TRAFFIC BARRICADES WILL BE REQUIRED AT ALL PROPOSED DRIVEWAY CONNECTIONS TO STREETS. BARRICADES SHALL CONFORM TO THE INSTALLATION SHOWN IN THE TMUTCD, LATEST VERSION.

6. CONTRACTOR SHALL OBTAIN LANE CLOSURE PERMITS WHEN LANE CLOSURES ARE REQUIRED.

7. CONTRACTOR SHALL COVER STREET EXCAVATIONS WITH ADEQUATELY ANCHORED STEEL PLATES DURING NONWORKING HOURS AND OPEN LANES OF TRAFFIC FLOW.

8. APPROVED COPIES OF "TRAFFIC CONTROL PLANS" AND LANE/SIDEWALK CLOSURES PERMITS SHALL BE AVAILABLE FOR INSPECTION AT JOB SITE AT ALL TIMES.

1. PRIOR TO START OF CONSTRUCTION, THE CONTRACTOR SHALL FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES WHERE PROPOSED UTILITIES ARE BEING CONNECTED. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF A CONFLICT IS DISCOVERED.

2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS SHOWN, COORDINATING THE HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITY SERVICES ENTERING THE BUILDING AND/OR CROSSING OTHER UTILITIES.

3. ALL UTILITY CONSTRUCTION, WATER TAPS, VALVES, MANHOLES, AND SERVICES SHALL BE INSTALLED BY THE CONTRACTOR AFTER APPROVAL FROM THE CITY AND SHALL CONFORM TO ALL GUIDELINES AND REGULATIONS SET FORTH BY THE CITY FOR WATER AND SANITARY SEWER CONSTRUCTION.

4. ALL FIRE LINES AND APPURTENANCES USED FOR FIRE PROTECTION SHALL CONFORM TO THE CURRENT CITY CONSTRUCTION STANDARDS.

5. ALL WATER MAINS 6"-12" DIA. SHALL MAINTAIN A MINIMUM COVER OF 48" UNDER UNPAVED FINISHED GRADE AND 42" UNDER PROPOSED OR EXISTING PAVEMENT. ALL SEWER MAINS SHALL MAINTAIN A MINIMUM COVER OF

6. THE CONTRACTOR SHALL SEQUENCE CONSTRUCTION TO AVOID INTERRUPTION OF WATER AND SANITARY SEWER SERVICE TO SURROUNDING AREAS.

7. EXITING AND/OR PROPOSED WATER MAINS SHALL BE LOWERED BELOW OR ABOVE PROPOSED SANITARY AND STORM SEWER LINES TO MAINTAIN A MINIMUM OF 1.5 FEET OF VERTICAL SEPARATION. THE CONTRACTOR SHALL MAINTAIN A MINIMUM 9-FEET (OUTSIDE TO OUTSIDE) SEPARATION BETWEEN SANITARY SEWER AND

8. EXISTING MANHOLE TOPS, VALVE BOXES, FIRE HYDRANTS AND ALL OTHER UTILITY APPURTENANCES SHALL BE ADJUSTED AS REQUIRED TO MATCH PROPOSED GRADES AS SHOWN ON GRADING PLAN. S.S. MANHOLES IN UNPAVED AREAS SHALL BE ADJUSTED TO BE 6" ABOVE GRADE.

9. FIRE HYDRANT CONNECTIONS SHALL BE LOCATED ON THE BUILDING NO LESS THAT 18" OR NO MORE THAT 48"

10. ALL VALVES AND FITTINGS SHALL HAVE MEGALUG ANCHORS

11. THE CONTRACTOR SHALL INSTALL CONCRETE COLLARS (OR OTHER APPROVED MEANS) ON THE UNDERGROUND UTILITIES, TO PREVENT GROUND WATER FROM MIGRATING IN THE UTILITY TRENCH, BELOW THE BUILDING SLAB.

12. ALL WATER AND SANITARY SEWER SERVICES SHALL CONFORM TO MODIFIED CITY STANDARD DETAILS 7.10 & 8.2

13. ALL PRIVATE WATER SERVICES LINES SHALL BE COPPER UNLESS NOTED OTHERWISE IN PLANS OF APPROVED BY

14. ALL WATER MAINS & WATER SERVICES SHALL INCLUDE TRACER WIRES

15. ALL BRASS FITTINGS SHALL BE FORD

16. ALL FIRE HYDRANTS SHALL BE WATEROUS

GENERAL NOTES

- APPROVAL FROM THE CITY ENGINEER OR DESIGNEE.
- UNIT COSTS, QUANTITIES AND AMOUNTS.
- WITHIN RIGHT-OF-WAYS OR EASEMENTS.
- REPORTS/TEST RESULTS TO THE CITY OF LUCAS.
- APPROVED GRADING PLAN AND/OR FILL PERMIT.
- ENGINEER SHALL INCORPORATE THESE CHANGES IN "RECORD DRAWINGS".
- TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ).
- 12. THE USE OF FLY ASH IS NOT ALLOWED IN THE CONCRETE MIX DESIGN.
- EASEMENTS OF RIGHTS-OF-WAYS.
- 15. THE MAX P.I. ALLOWED FOR A TREATED SUBGRADE IS 25.
- MINIMUM.

1. THE CITY OF LUCAS' INSPECTOR OVERTIME POLICY ALLOWS THE CONTRACTOR TO WORK FROM 7:00 AM TO 7:00 PM, MONDAY THROUGH SATURDAY. ANY REQUEST TO WORK ON A SATURDAY MUST BE MADE PRIOR TO 12 PM ON THURSDAY AFTERNOON. NO WORK IS ALLOWED ON SUNDAYS OR CITY HOLIDAYS WITHOUT WRITTEN

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING A COPY OF THE BID PROPOSAL FOR ALL PUBLIC IMPROVEMENTS TO THE CITY OF LUCAS AT THE PRE-CONSTRUCTION MEETING. THIS PROPOSAL SHALL INCLUDE

3. THE OWNER/CONTRACTOR SHALL BE RESPONSIBLE FOR PAYING A 3.0% INSPECTION FEE TO THE CITY OF LUCAS AT THE PRE-CONSTRUCTION MEETING FOR ALL PUBLIC IMPROVEMENTS.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A TWO (2) YEAR, 10% MAINTENANCE BOND TO THE CITY OF LUCAS FOR ALL PUBLIC IMPROVEMENTS (WATER, STORM DRAINAGE, PAVEMENT, DEVELOPER SIDEWALK)

5. NO WATER JETTING IS ALLOWED FOR WATER AND STORM SEWER DRAINAGE CONSTRUCTION.

6. ALL TRENCHES THAT ARE EXCAVATED TO A DEPTH IN EXCESS OF FIVE (5) FEET SHALL BE EXCAVATED AND MAINTAINED IN A MANNER THAT MEETS ALL OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) STANDARDS. PRIOR TO THE EXCAVATION AND CONSTRUCTION OF THE TRENCH(ES), THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING TWO (2) COPIES OF THE TRENCH OR INCREMENT THEREOF. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING A COPY OF ALL GEOTECHNICAL LABORATORY

7. THERE SHALL BE NO FILLING IN THE FLOODPLAIN OR DUMPING WITHIN THE CITY OF LUCAS WITHOUT AN

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RECORDING ALL FIELD CHANGES TO THE PLANS. THE PROJECT

9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING EROSION CONTROL IN ACCORDANCE WITH THE EROSION CONTROL PLAN PREPARED BY THE ENGINEER AND/OR AS IDENTIFIED ON THE STORM WATER POLLUTION PREVENTION PLAN (S.W.P.P.P.). THE CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL DEVICES WHEN FIELD CONDITIONS WARRANT OR AS DIRECTED BY THE CITY OF LUCAS OR THE ENGINEER.

10. THE PERMITTED OPERATOR SHALL SUBMIT COPIES OF THE NOTICE OF INTENT (N.O.I.) AND THE NOTICES OF TERMINATION (N.O.T.) TO THE CITY OF LUCAS ENGINEERING DIVISION AS PART OF THE SUBMITTAL TO THE

11. THE CONTRACTOR SHALL REMOVE AND REPLACE ANY CONCRETE PAVEMENT (DRIVE APPROACHES/STREET PANELS) WITHIN FIVE (5) DAYS OF SAW CUTTING THE PAVEMENT. CONCRETE PAVEMENT SUBJECT TO VEHICULAR TRAFFIC SHALL HAVE A COMPRESSIVE STRENGTH OF 4,200 PSI AT 3 DAYS.

13. ALL SUBGRADES FOR PUBLIC STREET IMPROVEMENTS SHALL BE TESTED FOR SULFATES PRIOR TO SUBGRADE TREATMENT. FILL MATERIALS CONTAINING SULFATES WILL NOT BE ALLOWED FOR USE WITHIN PUBLIC

14. THE DEVELOPER IS RESPONSIBLE FOR PROVIDING A PRELIMINARY GEOTECHNICAL REPORT AT THE TIME OF THE SUBMITTAL OF THE CONSTRUCTION DRAWINGS. THE DEVELOPER/CONTRACTOR IS RESPONSIBLE FOR PROVIDING A GEOTECHNICAL REPORT UPON COMPLETION OF THE SUBGRADE TREATMENT FOR COMPARISON.

16. THE DEVELOPER IS RESPONSIBLE FOR ALL THIRD PARTY COSTS ASSOCIATED WITH THE CONSTRUCTION OF THIS PROJECT (I.E. INSPECTIONS, FLAGGERS. TRAFFIC CONTROL PERFORMED BY POLICE OFFICERS AND ETC.)

17. ALL STREET AND ALLEY PAVEMENT SHALL BE REINFORCED WITH #4 BARS ON 18" CENTERS EACH DIRECTION

18. ALL SAW JOINTS & EXPANSION JOINTS SHALL BE SEALED PRIOR TO OPENING TO TRAFFIC



GENERAL NOTES	NEW CASTLE ESTATES peter James Grayum survey, abst. 354 city of Lucas, collin county, texas
8 LUCAS ESTATES, LLC 5997 CORAL RIDGE COURT	FRISCO, TEXAS 75034
Revisions: 1.	
December OF Brian L. Ur 8247 GSTE	08, 2021
TEXAS DEVELOPM 4888 Pecan P McKinney, T 972-427-4 TX FIRM NC	ENT SERVICES lace Drive X 75071 4100 D. 12790

TDS PROJECT NO. 18009

03



s\18009-PS-Lucas\DWG\18009-GEN.dwg PLOT DATE/TIME: 12/8/2021 - 7:23





BUILDERS DESIGNATED SUBDIVISION WASH-OUT PIT



- Necessary compliance with EPA requirements will require each builder to direct transit ready-mix concrete trucks to a designated wash out area. This area will be on a centrally located lot that is owned, maintained, and returned back
- to building pad state at the near completion of a subdivision built out. Waste concrete from the site of the washout pit will require legal disposal. It is the building contractor's responsibility to direct the concrete truck drivers to the designated wash out area for his subdivision.
- 5. Street, alleyway or vacant lot washout is strictly prohibited.

raded rock 4—8 inches in diameter. enclosed by a woven wire sheathing with a one inch and a minimum wire size of 20 gauge.
depth equal to one—third of the height of the nichever is less, the silt shall be removed n acceptable location.

POLLU	TION CON
1.	This plan
2.	The const
	Α.
	В.
	C.
	D.
	E.
	F.
	G.
	Н.
3.	Best mana construction swales, see ponds and
4.	The total e
	The total e
	The total e
5.	The estim
6.	The estim
7.	The slope 3.0%
8.	The storm of Frisco.
9.	The soils
10.	The contra mouths du
11.	The Contr
12.	All disturb contractor
13.	The contra
14.	The contr erosion co
15.	A copy of posted at issued, a c
16.	Contractor Termination Pollution F
17.	All erosior specificati Engineer a
18.	If off-site s notify the o and local r
19.	Inspection functioning is being tra- from the w through an re-grading
20.	Maintenar week or w be done a
21.	Final stabi restoratior
22.	Sedimenta full (by vol
23.	Contractor
24.	No public

ITROL GENERAL NOTES has been prepared to provide means to prevent or minimize pollution of storm water.	EROSION DETAILS	NEW CASTLE ESTATES peter James Grayum survey, ABST. 354 city of LUCAS, collin county, texas
truction activity included in this plan will include: Clearing and Grubbing		、 匚
Stock PilingRough GradingUtility installation/excavation of trenchesFinal or finish gradingPavement installationBuilding constructionPreparation of seeding or planting	FSTATFS IIC	AL RIDGE COURT TEXAS 75034
agement practices (structural practices) used on this project could include: silt fencing, on entrance, inlet protection, outlet protection, subsurface drains, check dams, drainage ediment traps, earth dike, pipe slope drains, erosion control matting, detention/retention d sediment basins. estimated site area is 638,634 SF		97 COR/ FRISCO,
estimated site area to be disturbed is 638,634 SF		59
estimated site area not to be disturbed is 0 SF		
nated runoff coefficient prior to development of the project is 0.35		
ated runoff coefficient upon completion of the project is 0.85		
es expected on the site upon completion of final grading will range between 0.80% TO		
n water exiting the site is collected in an existing drainage system maintained by the City		
present at the site are generally expansive clays.		
actor shall provide erosion protection around the work area perimeter and at all inlet uring construction		
ractor will remove all excess soil from construction vehicles prior to exiting the site bed areas which will be re-distributed for a minimum of 14 days must be stabilized by the r to control erosion		
actor shall undertake proper methods to reduce dust generation from the site ractor must comply with federal, state and local regulations regarding sediment and	ö	
the storm water pollution prevention plan along with the EPA (NPDES) permit must be the construction site throughout the construction of the project. If the permit has not been copy of Notice of Intent (NOI) shall be posted	Revision 1.	
r shall be responsible for submittal of the EPA's requirement of a NOI and the Notice of on (NOT) and any additional requirement per the EPA Guidelines for Storm Water Prevention.	Decem	ber 08, 2021
n control devises are to be installed in accordance with the approved plans and ions for this project. Changes are to be approved before construction by the Project and the City.	Brian	L. Umberger
soil, borrow or spoil sites are used in conjunction with this project, the contractor shall City Inspector and be responsible for erosion control requirements as per Federal, State requirements	Sector Se	82474 GISTER SIONAL E
n shall be made weekly and after rain storm event so to insure that the devices are g properly. When sediments or mud has clogged the void spaces between stones or mud racked onto a public roadway the affected pad must be washed down or replaced. Runoff wash down operation shall not be allowed to drain directly off-site without first flowing nother best management practice (BMP) to control off-site sedimentation. Periodic g or the addition of new stone may be required to maintain efficiency of the installation.		allase
nce and inspection procedures: Control measures shall be inspected at least once a vithin 24 hours of any storm event of 0.5 inches or greater. If repair is necessary, it shall at the earliest practical date, but in no case greater than 48 hours.		
ilization is deemed as a uniform perennial vegetative cover at a minimum of 80% n of the native or natural pre-existing background cover for the area		
ation ponds/traps must be cleaned out when sedimentation accumulates to a point of 50% lume),	TEXAS DEVE 4888 P McKi	ELOPMENT SERVICES Pecan Place Drive nney, TX 75071
rs shall seed all disturbed areas immediately upon completion of final grading.	97 TX F	72-427-4100 IRM NO. 12790
acceptance until (final stabilization) vegetation is established on all disturbed areas.	TDS PRO	DJECT NO. 18009
		05









S-Lucas\DWG\18009-WSS.dwg PLOT DATE/TIME: 12/8/2021 - 7:23



(Acres)	Coeff.	(minutes)	(in./hr.)	(in./hr.)	(in./hr.)	(in./hr.)	(c.f.s.)	(c.f.s.)	(c.f.s.)	(c.f.s.)		
"A"	"C"	T _C		"I"	"["	"1"	"Q"	"Q"	"Q"	"Q"		
6.60	0.35	15.0	4.91	5.54	6.42	7.86	11.34	12.80	14.83	18.16		Flow to Ex 3-24'
4.36	0.35	15.0	4.91	5.54	6.42	7.86	7.49	8.45	9.80	11.99		Flow to Ex 3-24'
4.75	0.35	15.0	4.91	5.54	6.42	7.86	8.16	9.21	10.67	13.07	10 r	Flow to Ex 18"0
0.89	0.35	15.0	4.91	5.54	6.42	7.86	1.53	1.73	2.00	2.45		Flow to Ex 3-24'
0.85	0.35	15.0	4.91	5.54	6.42	7.86	1.46	1.65	1.91	2.34	48.00	Flow to Ex 18"0
												Flow through Po
9.01	0.35	20.0	4.28	4.84	5.62	6.90	13.50	15.26	17.72	21.76		& Pond B
8.96	0.35	20.0	4.28	4.84	5.62	6.90	13.42	15.18	17.62	21.64	43.40	Flow to 3-24"R
					10-15-01-1-01-1				Comparing States and			

Area	Runoff	Time(conc.)	Intensity 5-YR	Intensity 10-YR	Intensity 25-YR	Intensity 100-YR	Discharge (5-yr)	Discharge (10-yr)	Discharge (25-yr)	Discharge (100-yr)		Comment
(Acres)	Coeff.	(minutes)	(in./hr.)	(in./hr.)	(in./hr.)	(in./hr.)	(c.f.s.)	(c.f.s.)	(c.f.s.)	(c.f.s.)		
"A"	"C"	Tc		l	" "	" "	"Q"	"Q"	"Q"	"Q"		
6.60	0.55	15.0	4.91	5.54	6.42	7.86	17.82	20.11	23.30	28.53		To detention Po
4.36	0.55	15.0	4.91	5.54	6.42	7.86	11.77	13.28	15.40	18.85		To detention Po
4.75	0.55	15.0	4.91	5.54	6.42	7.86	12.83	14.47	16.77	20.53		To detention Po
0.89	0.55	15.0	4.91	5.54	6.42	7.86	2.40	2.71	3.14	3.85		Flow to Ex 3-24
0.85	0.55	15.0	4.91	5.54	6.42	7.86	2.30	2.59	3.00	3.67	75.44	Flow to Ex 18"



)-DRAINAGE.dwg PLOT DATE/TIME: 12/8/2021 - 7:23pm

) FILE: C:\Users\Brian\Dropbox\TDS\18009-PS-Lucas\DWG\18009-DRAINAGE.dwg

5-yr DA "A"								
Peak Dischar	ge - Pre-Proj	ect						
Duration	Intensity	c	A	Q				
<u>(Min.)</u>	<u>(In./Hr.)</u>		(Acres)	(cfs)				
20.0	4.28	0.35	6.60	9.9		Requir	ed Storage V	olume
							9078	cu. Ft
Releas	e Rate	ROU	ED FLOW:	13.5			336	cu. Yd.
9.9) cfs	TO	TAL FLOW:	23.4			0.21	ac-ft
						Tim	e to Peak(Tp	eak)
							30	minute
Peak Dischar	ge - Post-Pro	ject						
Duration	Intensity	с	A	Q		1		
<u>(Min.)</u>	<u>(In./Hr.)</u>		(Acres)	<u>(cfs)</u>				
15.0	4.91	0.55	6.60	17.8				
Total Inflow -	Proposed Co	onditions						
Duration	Intensity	munuons	Δ	0				
(Min)	(In /Hr)	С	(Acree)	(cfe)	Inflow/cf)	Outflow/cf)	Storage(cf)	Storagelo
10	5.92	0 550	6.60	21 1	12660	7/10	5250	105
15	4 91	0.550	6.60	17.9	16057	8894	7163	265
20	4 28	0.550	6.60	15.5	18635	10376	8259	306
30	3 /3	0.550	6.60	12.5	22410	133/1	0079	336
40	2.90	0.550	6.60	10.5	25163	16305	9010	300
40	2.69	0.550	6.60	0.1	20103	10305	8040	200
60	2.01	0.550	6.60	0.1	20072	22225	6030	258
70	2.22	0.550	6.60	73	29072	22235	5360	100
80	1.03	0.550	6.60	6.6	31970	20100	3706	133
00	1.00	0.000	0.00	0.0	010/0	20104	0,00	101
Duration	Intensity	ect C	A (Acros)	Q (cfr)				
(10111.)	(In./Hr.)	0.25	(Acres)	(CIS)		Deguis	ad Otorage V	(aluma
20.0	4.04	0.35	0.00	11.2		Requi	10360	cu Et
Poloas	o Pato	POUT		15.26			384	cu. Yd
11 3	e rate	TO	TAL FLOW	26.4			0.24	ac-ft
11.2		10	IAL I LOW.	20.4		Tim	e to Peak/Tn	eak)
							30	minute
Peak Dischar	ae - Post-Pro	iect						
Duration	Intensity	1000	Α	Q				
(Min.)	(In./Hr.)	С	(Acres)	(cfs)				
15.0	5.54	0.55	6.60	20.1				
Total Inflow -	Proposed Co	onditions						
Duration	Intensity	C	Α	Q	0.00000000	1		
(Min.)	<u>(ln./Hr.)</u>		(Acres)	<u>(cfs)</u>	Inflow(cf)	Outflow(cf)	Storage(cf)	Storage(c)
10	6.54	0.550	6.60	23.7	14236	8377	5859	217
10		O EEO	6.60	20.1	18101	10053	8048	298
10 15	5.54	0.550			04000	11728	0225	
10 15 20	5.54 4.84	0.550	6.60	17.6	21063	11120	9335	346
10 15 20 30	5.54 4.84 3.89	0.550 0.550 0.550	6.60 6.60	17.6 14.1	21063 25448	15079	9335 10369	346 384
10 15 20 30 40	5.54 4.84 3.89 3.29	0.550 0.550 0.550	6.60 6.60 6.60	17.6 14.1 11.9	21063 25448 28657	15079 18430	10369 10227	346 384 379
10 15 20 30 40 50	5.54 4.84 3.89 3.29 2.86	0.550 0.550 0.550 0.550	6.60 6.60 6.60 6.60	17.6 14.1 11.9 10.4	21063 25448 28657 31187	15079 18430 21781	10369 10227 9406	346 384 379 348
10 15 20 30 40 50 60	5.54 4.84 3.89 3.29 2.86 2.55	0.550 0.550 0.550 0.550 0.550 0.550	6.60 6.60 6.60 6.60 6.60	17.6 14.1 11.9 10.4 9.2	21063 25448 28657 31187 33276	15079 18430 21781 25132	9335 10369 10227 9406 8144	346 384 379 348 302
10 15 20 30 40 50 60 70	5.54 4.84 3.89 3.29 2.86 2.55 2.30	0.550 0.550 0.550 0.550 0.550 0.550 0.550	6.60 6.60 6.60 6.60 6.60 6.60	17.6 14.1 11.9 10.4 9.2 8.3	21063 25448 28657 31187 33276 35059	15079 18430 21781 25132 28483	9335 10369 10227 9406 8144 6576	346 384 379 348 302 244
10 15 20 30 40 50 60 70 80	5.54 4.84 3.89 3.29 2.86 2.55 2.30 2.10	0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550	6.60 6.60 6.60 6.60 6.60 6.60 6.60	17.6 14.1 11.9 10.4 9.2 8.3 7.6	21063 25448 28657 31187 33276 35059 36615	15079 18430 21781 25132 28483 31834	9335 10369 10227 9406 8144 6576 4781	346 384 379 348 302 244 177
10 15 20 30 40 50 60 70 80 90	5.54 4.84 3.89 3.29 2.86 2.55 2.30 2.10 1.94	0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550	6.60 6.60 6.60 6.60 6.60 6.60 6.60 6.60	17.6 14.1 11.9 10.4 9.2 8.3 7.6 7.0	21063 25448 28657 31187 33276 35059 36615 37999	15079 18430 21781 25132 28483 31834 35185	9335 10369 10227 9406 8144 6576 4781 2814	346 384 379 348 302 244 177 104
10 15 20 30 40 50 60 70 80 90	5.54 4.84 3.89 3.29 2.86 2.55 2.30 2.10 1.94	0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550	6.60 6.60 6.60 6.60 6.60 6.60 6.60 6.60	17.6 14.1 11.9 10.4 9.2 8.3 7.6 7.0	21063 25448 28657 31187 33276 35059 36615 37999	15079 18430 21781 25132 28483 31834 35185	9335 10369 10227 9406 8144 6576 4781 2814	346 384 379 348 302 244 177 104
10 15 20 30 40 50 60 70 80 90 MODIFIE	5.54 4.84 3.89 3.29 2.86 2.55 2.30 2.10 1.94 D RATIO	0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550	6.60 6.60 6.60 6.60 6.60 6.60 6.60	17.6 14.1 11.9 10.4 9.2 8.3 7.6 7.0 ETEN	21063 25448 28657 31187 33276 35059 36615 37999	15079 18430 21781 25132 28483 31834 35185 LCULATIC	9335 10369 10227 9406 8144 6576 4781 2814 ONS	346 384 379 348 302 244 177 104
10 15 20 30 40 50 60 70 80 90 MODIFIE 25-yr DA "A"	5.54 4.84 3.89 3.29 2.86 2.55 2.30 2.10 1.94 D RATIO	0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550	6.60 6.60 6.60 6.60 6.60 6.60 6.60 7HOD D	17.6 14.1 11.9 10.4 9.2 8.3 7.6 7.0 ETEN	21063 25448 28657 31187 33276 35059 36615 37999 TION CAI	15079 18430 21781 25132 28483 31834 35185 LCULATIC	9335 10369 10227 9406 8144 6576 4781 2814 DNS	346 384 379 348 302 244 177 104
10 15 20 30 40 50 60 70 80 90 MODIFIE 25-yr DA "A" Peak Dischar	5.54 4.84 3.89 2.86 2.55 2.30 2.10 1.94 DRATIO	0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 NAL ME ect	6.60 6.60 6.60 6.60 6.60 6.60 6.60 THOD D	17.6 14.1 11.9 10.4 9.2 8.3 7.6 7.0 ETEN	21063 25448 28657 31187 33276 35059 36615 37999	15079 18430 21781 25132 28483 31834 35185 LCULATIC	9335 10369 10227 9406 8144 6576 4781 2814 DNS	346 384 379 348 302 244 177 104

25-yr DA "A"								
Peak Dischar	ge - Pre-Proje	ct						
Duration Intensity		•	A	Q				
(Min.)	(In./Hr.)	C	(Acres)	(cfs)				
20.0	5.60	0.35	6.60	12.95		Requir	red Storage V	/olume
A							12142	cu. Ft
Releas	e Rate	ROU	TED FLOW:	17.72			450	cu. Yd.
12.9) cfs	TO	TAL FLOW:	30.7			0.28	ac-ft
						Tim	e to Peak(Tp	eak)
							30	minute
Peak Dischar	ge - Post-Proj	ect						
Duration	Intensity	~	Α	Q				
(Min.)	<u>(ln./Hr.)</u>	C	(Acres)	(cfs)				
15.0	6.40	0.55	6.60	23.2				
Total Inflow -	Proposed Co	nditions						
Duration	Intensity	C	Α	Q				
<u>(Min.)</u>	<u>(ln./Hr.)</u>	v	(Acres)	(cfs)	Inflow(cf)	Outflow(cf)	Storage(cf)	Storage(cy
10	7.53	0.550	6.60	27.3	16403	9710	6693	248
15	6.40	0.550	6.60	23.2	20924	11652	9272	343
20	5.60	0.550	6.60	20.3	24413	13593	10819	401
30	4.53	0.550	6.60	16.5	29620	17477	12142	450
40	3.84	0.550	6.60	13.9	33466	21361	12104	448
50	3.35	0.550	6.60	12.2	36518	25245	11273	418
60	2.99	0.550	6.60	10.8	39054	29129	9925	368
70	2.70	0.550	6.60	9.8	41228	33013	8215	304
80	2.48	0.550	6.60	9.0	43134	36896	6238	231
90	2.29	0.550	6.60	8.3	44835	40780	4055	150

00-yr DA "A"								
eak Dischar	ge - Pre-Proje	ct						
Duration	Intensity	c	A	Q				
(Min.)	<u>(ln./Hr.)</u>	v	(Acres)	(cfs)				
20.0	6.90	0.35	6.60	15.9		Requir	ed Storage V	/olume
							15353	cu. Ft
Release	e Rate		Routed flow	21.8			569	cu. Yd.
15.9	cfs		Total flow:	37.7			0.35	ac-ft
	2					Tim	e to Peak(Tp	eak)
							40	minutes
Peak Dischar	ge - Post-Proj	ect						
Duration	Intensity	c	Α	Q				
(Min.)	<u>(ln./Hr.)</u>	C	(Acres)	(cfs)				
15.0	7.86	0.55	6.60	28.5				
Total Inflow -	Proposed Co	nditions						
Duration	Intensity		A	Q				
(Min.)	(ln./Hr.)	C	(Acres)	(cfs)	Inflow(cf)	Outflow(cf)	Storage(cf)	Storage(cy)
10	9.20	0.550	6.60	33.4	20027	11956	8072	299
15	7.86	0.550	6.60	28.5	25665	14347	11319	419
20	6.90	0.550	6.60	25.0	30060	16738	13322	493
30	5.62	0.550	6.60	20.4	36694	21520	15173	562
40	4.78	0.550	6.60	17.4	41655	26302	15353	569
50	4.19	0.550	6.60	15.2	45632	31085	14547	539
60	3.75	0.550	6.60	13.6	48962	35867	13095	485
70	3.40	0.550	6.60	12.3	51836	40649	11186	414
80	3.12	0.550	6.60	11.3	54370	45432	8938	331
90	2.89	0.550	6.60	10.5	56642	50214	6428	238

Routing existing flow through channels: Channel A: Q=12.90+17.72= 30.67 CFS

Routing existing flow through channels: Channel A: Q=15.90+21.76= 37.70 CFS

 $Q=C_dA\sqrt{2gh}$

0.550	6.60	21.1	12669	7412	5258	195	
0.550	6.60	17.8	16057	8894	7163	265	
0.550	6.60	15.5	18635	10376	8259	306	
0.550	6.60	12.5	22419	13341	9078	336	
0.550	6.60	10.5	25163	16305	8858	328	
0.550	6.60	9.1	27310	19270	8040	298	
0.550	6.60	8.1	29072	22235	6838	253	
0.550	6.60	7.3	30569	25199	5369	199	
0.550	6.60	6.6	31870	28164	3706	137	
AL ME	THOD [DETEN	TION CAI		ONS		Routing existing flow through channels:
							Channel A: Q=11.20+15.26= 26.43 CF

	33" DIA. ORIFICE			
	Delta Elev	Stage	Discharge	
	0.00	602.79	0.00	
	0.10	602.89	0.56	
	0.20	602.99	1.59	
	0.30	603.09	2.93	
	0.40	603.19	4.51	
	0.50	603.29	6.30	
	0.60	603.39	8.28	
	0.70	603.49	10.44	
	0.80	603.59	12.75	
	0.90	603.69	15.21	
	1.00	603.79	17.82	
	1.10	603.89	20.56	
5-YR WSE	1.20	603.99	23.42	
10-YR WSE	1.30	604.09	26.41	
	1.40	604.19	29.52	
25-YR WSE	1.50	604.29	32.74	
	1.60	604.39	36.18	
	1.70	604.49	37.29	
	1.71	604.50	37.40	
	1.72	604.51	37.51	
	1.73	604.52	37.62	
100-YR WSE	1.74	604.53	37.72	
	1.75	604.54	37.83	
	1.76	604.55	37.94	
	1.77	604.56	38.05	
	1.78	604.57	38.16	
	1.79	604.58	38.26	
	1.80	604.59	38.37	
	1.90	604.69	39.42	
	2.00	604.79	40.44	

Detetion Volume Calculations Drainage Area A 606.70 605.30 Edge of street elevation: 100-yr Water Surface Elevation: Pipe flowline Elevation: 602.50 Contour elevation Surface area (sf) Average Area Cumulative Volume (cf) 602.5 0 1560 603.66 3120 1810 3479 2992 604 3838 6463 605 9087 9455 9562 606 19017 10037

DETENTION CALCULATIONS		NEW CASTLE ESTATES peter James Grayum survey, ABST. 354 city of Lucas, collin county, texas
	8 LUCAS ESTATES, LLC 5997 CORAL RIDGE COURT	FRISCO, TEXAS 75034
Revisions: 1. RECORD, DRAWING	DATE: December 08, 2021	THIS RECORD DRAWING HEREIN REFLECTS TO THE BEST OF THE DESIGN ENGINEER'S KNOWLEDGE THE APPROXIMATE LOCATION OF THE CONSTRUCTED WORK USING INFORMATION PROVIDED BY THE CONTRACTOR(S).
Dece	mber OF OF an L. Ur 8247	08, 2021
TEXAS D 488 M T. TDS F	EVELOPM B Pecan P CKinney, T 972-427- X FIRM NC PROJECT 11	ENT SERVICES Place Drive 7X 75071 4100 D. 12790 NO. 18009

Link Link Link Link Link Product on Col 1 - Yi 23.0 Col 200 (1.00) Product on Col 1 - Yi 23.0 Col 200 (1.00) Product on Col 1 - Yi 23.0 Col 200 (1.00) Product on Col 1 - Yi 23.0 Col 200 (1.00) Product on Col 1 - Yi 23.0 Col 200 (1.00) Product on Col 1 - Yi 23.0 Col 200 (1.00) Product on Col 1 - Yi 23.0 Col 200 (1.00) Product on Col 1 - Yi 23.0 23.0 23.0 23.0 <th>Duration</th> <th>Intensity</th> <th>с</th> <th>Α</th> <th>Q</th> <th></th> <th></th> <th></th> <th></th>	Duration	Intensity	с	Α	Q				
Image: Description Image:	(Min.)	<u>(ln./Hr.)</u>	0.35	(Acres)	(cfs)		Pognin	ed Storage M	olume
Release Rate 0.6. d*/ Poster for: 1*At 25.4 CF3 .2.2.2. v/4 .0.4.4 ectt. ALLONED 58.0 CF5 Time to Peak/Value Time to Peak/Value Set Discharge - PostProject Time to Peak/Value Set Discharge - PostProject Time to Peak/Value Set Discharge - PostProject Final How - Proposed Conditions C A.t. C Attention - PostProject Time to Peak/Value Set Discharge - PostProject Durision intervity Value Discharge - PostProject Att Set Set Set Set Set Set Set Set Set S	20.0	4.30	0.55	4.00	0.0		Requir	6028	cu. Ft
Control All Allocot See 0 Crist Time to Part (Tour) 282.0 Licking - FoodProtect Allocot See 0 Crist 30 mitrules 283.0 Licking - FoodProtect Allocot Crist Allocot Crist 30 mitrules 283.0 Licking - FoodProtect Allocot Crist Allocot Crist 30 Mitrules 283.0 Licking - FoodProtect Crist Crist Crist See 0	Releas	e Rate	Routed flow:	OS-1 * "A"	23.4	CES		223	cu. Yd.
Deschurge - PostProject Deschurge - Po	0.0	013		ALLOWED	55.90	CFS	Tim	e to Peak(Tpe	eak)
Answer and the construction A Q A Q 15.0 0.4.04 0.55 4.5.0 11.9 - - 15.0 0.4.04 0.55 4.5.0 11.9 - - - 15.0 0.4.04 0.55 4.5.0 10.9 11.9 - - - 15.0 0.4.05 0.50 4.5.0 10.3 11.07.4 Bioscape(c) Bioscape(c) 20.65 4.5.0 4.5.0 4.5.0 4.5.0 10.7.1 Sec.0 22.0.2 2.0.5 4.5.0 4.5.0 4.5.0 10.7.1 Sec.0 2.0.2 2.0.5 4.5.0 4.5.0 4.5.0 10.7.2 2.0.2 2.0.5 4.5.0 4.5.0 10.7.2 2.0.2 4.5.0 10.2.2 2.0.7.7 2.0.2 4.5.0 10.7.2 2.0.2 0.7.6 10.7.2 2.0.2 0.7.6 10.7.2 2.0.2 0.7.6 10.7.2 2.0.2 0.7.6 10.7.2 2.0.7 2.0.7 10.7.7 10.7.7 <t< td=""><td>Peak Discher</td><td>Re - Boot Bro</td><td>hiect</td><td></td><td></td><td></td><td></td><td>30</td><td>minutes</td></t<>	Peak Discher	Re - Boot Bro	hiect					30	minutes
MMLD Dis. (Acces) (Acces) (B) 150 4.50 0.55 4.50 1.10 <t< td=""><td>Duration</td><td>Intensity</td><td></td><td>Α</td><td>Q</td><td></td><td></td><td></td><td></td></t<>	Duration	Intensity		Α	Q				
Otal Infor Proposed Conditions A D D Otal Infor Proposed Conditions A D Information Proposed Conditions Duration Information C A D Information Proposed Conditions 20 4.50 0.500 4.30 10.3 10.74 600 444 203 20 2.50 0.500 4.30 10.3 10.74 600 444 203 20 2.52 0.500 4.30 4.41 2003 4.57 178 600 168	(Min.)	<u>(In./Hr.)</u>	0.55	(Acres)	(cfs)				
Interview DM3 Terview (methy) C A column (Arres) Interview (Arres) Uniterview (Arres) Uniterview (Arres) <th< td=""><td>10.0</td><td>4.34</td><td>0.00</td><td>U</td><td>11.0</td><td></td><td></td><td></td><td></td></th<>	10.0	4.34	0.00	U	11.0				
Duration Treasity (10) C (10) A (10) A (10) <t< td=""><td>Total Inflow</td><td>Proposed Co</td><td>onditions</td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	Total Inflow	Proposed Co	onditions						
NMD. (P.H.P.) (P.C.B.) (P.C.B.) <th< td=""><td>Duration</td><td>Intensity</td><td>C</td><td>Α</td><td>Q</td><td></td><td></td><td></td><td></td></th<>	Duration	Intensity	C	Α	Q				
15 4.54 0.50 4.35 11.8 0002 0000 4765 1776 1765 1776 1	(Min.) 10	(In./Hr.) 5.85	0.550	(Acres) 4.36	(cfs) 14 0	Inflow(cf) 8412	Outflow(cf) 4921	Storage(cf) 3491	Storage(cy) 129
20 4.35 0.50 4.36 10.3 12374 6800 5444 203 30 3.42 0.530 4.36 6.4 203 3.42 6.530 1.42 6.530 1.42 6.530 1.43 6.40 1.22 6.530 1.53 1.5	15	4.94	0.550	4.36	11.8	10662	5906	4756	176
10 230 0.580 4.38 0.0 1075 1027 5822 216 80 2.24 0.560 4.38 6.0 10134 1275 5359 118 80 2.24 0.560 4.38 6.4 1934 1275 5356 132 80 1.59 0.580 4.38 4.4 1934 1277 3556 132 80 1.59 0.580 4.38 4.4 121277 2007 1257 47 MODIFIED RATIONAL METHOD DETENTION CALCULATIONS 9(pt.D.*10" C Acmail (b) 7.4 2.45 0.55 170 2.57 47 Reguined Excage Volume 120.0 4.64 0.55 4.38 10.3 7.4 2.45 0.55 7.6 2.56 7.6 2.56 7.6 2.56 7.6 7.6 2.56 7.6 7.6 2.56 7.6 7.6 7.6 7.6 7.6 7.6 <td>20</td> <td>4.30</td> <td>0.550</td> <td>4.36</td> <td>10.3</td> <td>12374</td> <td>6890 8858</td> <td>5484 6028</td> <td>203</td>	20	4.30	0.550	4.36	10.3	12374	6890 8858	5484 6028	203
50 2.52 0.500 4.38 6.4 9134 12785 5339 198 60 2.54 0.550 4.38 6.4 21162 14705 4530 147 MODIFIED RATIONAL METHOD DETENTION CALCULATIONS International internatinterenational internatinterenation	40	2.90	0.550	4.36	7.0	16708	10827	5882	218
TO 2.02 0.80 1.48 0.80 1.72 3.905 1.92 80 1.48 0.850 4.38 4.41 21192 20070 1.257 47 MODIFIED RATIONAL METHOD DETENTION CALCULATIONS 1.257 47 4.257 4.257 4.257 4.257 4.257 4.257 4.257 4.257 4.257 4.257 4.257 4.257 4.257 4.257 4.257 4.258 4.257 4.258 <td>50</td> <td>2.52</td> <td>0.550</td> <td>4.36</td> <td>6.0</td> <td>18134</td> <td>12795</td> <td>5339</td> <td>198</td>	50	2.52	0.550	4.36	6.0	18134	12795	5339	198
B0 1.84 0.850 4.35 4.1 21162 12707 1.2481 91 B0 0.950 0.350 4.35 4.1 21162 12707 1281 91 B0 0.950 0.550 4.35 4.1 21162 12707 1281 91 B0 0.950 0.550 <	70	2.02	0.550	4.36	4.8	20298	16732	3565	132
No. No. No. No. No. No. No. No.PDIFIED RATIONAL METHOD DETENTION CALCULATIONS Prevalue	80 90	1.84	0.550	4.36	4.4	21162	18701 20670	2461 1257	91 47
MCDIFIED RATIONAL METHOD DETENTION CALCULATIONS (Min) (bit) C (Ass) (bit) (Ass) (bit) C (Ass) (bit) (Ass) (bit) C (Ass) (bit) (Min) (bit) C (Ass) (bit) (bit) <td></td> <td></td> <td>0.000</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>			0.000						
Sex Bit Service A Q Duration (In) (In) (In) (In) (In) (In) (In) (In)	MODIFIE	D RATIO	NAL ME	THOD D	ETEN	TION CAL		DNS	
Duration Intensity C A O 20.00 4.84 0.35 4.38 7.4 Required storage volume 600 c.r. P. Release Rate Post Memory 0.11 * X2 38.4 CFS 20.0 1.6 a.6 c.1 Part Release Rate Total Release Rate 35.84 CFS Time to Pear(Tpak) 0.6 a.6 c.1 Part Release Rate C A Q C A Q Min.1 (ht/H) C A Q C.5 Time to Pear(Tpak) 180 5.54 0.555 4.36 13.3 1185 6641 53.7 177 190 5.54 0.550 4.38 13.3 1185 6641 53.7 177 20 5.50 0.550 4.38 7.3 18931 12.175 6755 22.50 20 0.550 4.38 6.5 2.3160 18.81 4.344 161 100 1.26 0.555 4.38 6.5	Peak Dischar	ge - Pre-Proj	ect						
Link Link Link Link Link Link Link Required Storage Yourne Required Storage Yourne<	Duration	Intensity	с	A	Q				
Release Fact Routed for: 28.46 CFS 28.46 CFS ALLOWED 55.90 CFS Three DPeak(Fpeak) 0.16 acrt. Peak Discharge - Posk-Project ALLOWED 55.90 CFS Three DPeak(Fpeak) Duration Internaty C A. 0. 0. 0. Mile.1 Internaty C A. 0. 0. 0. 0. Mile.1 Internaty C A. 0. </td <td>(IVIII.) 20.0</td> <td><u>(In./Hr.)</u> 4.84</td> <td>0.35</td> <td>(Acres) 4.36</td> <td>(<u>cts</u>) 7.4</td> <td></td> <td>Requir</td> <td>ed Storage V</td> <td>olume</td>	(IVIII.) 20.0	<u>(In./Hr.)</u> 4.84	0.35	(Acres) 4.36	(<u>cts</u>) 7.4		Requir	ed Storage V	olume
Preventse nate 7.4 dB Total Reser Total Reser CFS 228 dL VI (CFS 228 dL VI (CFS <td></td> <td>Det</td> <td>Dent 17</td> <td>00.445</td> <td>00.15</td> <td>050</td> <td></td> <td>6850</td> <td>cu. Ft</td>		Det	Dent 17	00.445	00.15	050		6850	cu. Ft
ALLOWED 55.90 CFS Time to Peak(Tpeak) Duration Intensity C A Q (Min.) (b.f.h.) C A Q (Min.) (b.f.h.) C A Q (Min.) (b.f.h.) C Access) (cfs) Inflow(cf) Storage(cf) (Min.) (b.f.h.) C Access) (cfs) Inflow(cf) Storage(cf) Storage(cf) 15 6.54 0.550 4.38 11.6 1914 7748 6641 5217 193 30 3.80 0.550 4.38 7.9 19031 12175 6756 226 40 3.28 0.550 4.38 6.5 23180 1980 6913 230 50 1.84 0.550 4.38 6.5 23180 1980 199 197 50 1.84 0.550 4.38 6.6 Received Storage(cf) 107 228 230 1199	Releas	cfs	Total Rel	ease Rate:	26.46 33.84	CFS		254	ac-ft
Back Discharge - Post-Project A Q A A Q A A Q A A Q A A Q A A A Q A A Q A				ALLOWED	55.90	CFS	Tim	e to Peak(Tpe	eak)
Duration Intensity C A Q (Min.) (n.Hr.) C (A.se) (Gs) (Gs) 15.0 0.554 0.55 4.36 13.3 foral inflow - Proposed Conditions A Q (Gs) Outflow(G) Storage(c) Storage(c) 10 6.54 0.550 4.38 13.3 11696 653.4 3870 143 10 6.54 0.550 4.38 13.3 11691 695.0 255.0 143 1602 258.0 199 250 127.5 675.6 250.0 1360 253.0 199 107.0 2.30 0.550 4.38 5.5 23160 198.6 253.0 199 107.0 2.30 0.550 4.38 5.5 23160 198.6 99 20.0 0.550 4.36 5.0 248.8 1288.0 136.0 117 20 117 20 117 20 116.0 20 117 20	Peak Dischar	ge - Post-Pro	iect					30	minutes
(Mn.) (In./Hc.) - (Acres) (CS) Total Inflow - Proposed Conditions A 0 (Inflow)(C) Storage(c) Storage(c) Min. (In./Hc.) 0.554 0.55 4.33 1155 Storage(c)	Duration	Intensity	C	Α	Q				
Total Inflow - Proposed Conditions Total Inflow - Proposed Conditions Conditions Conditions Conditions Conditions Conditions Conditions Storage(c)	(Min.)	(In./Hr.)	0.55	(Acres)	(cfs)	5			
Total Inflow - Proposed Conditions A Q Outling Outling Storage(c) Storage	10.0	3.34	0.00	4.00	10.0				
Duration Impact Number Nu	Total Inflow	Proposed C	onditione						
(Mn.) (n./k.) - (d.m.) (n.fmax) (c.h.) Inflow(cf) Storage(cf) Storage(cf) <t< td=""><td>Duration</td><td>Intensity</td><td>C</td><td>Α</td><td>Q</td><td></td><td></td><td></td><td></td></t<>	Duration	Intensity	C	Α	Q				
16 0.560 1.38 11058 6941 0.517 107 20 440 0.500 4.38 9.3 116 11911 9961 6500 224 30 3.89 0.550 4.38 9.3 11611 9961 6500 224 40 3.29 0.550 4.38 6.1 21831 2177 6776 226 40 3.25 0.550 4.38 6.1 21831 1631 230 3199 177 80 2.10 0.550 4.38 6.5 2248 2030 3159 197 80 1.94 0.550 4.38 4.6 25103 23243 1859 69 Proper cist Proper cist Burdion intensity C A C Required Storage Volume Botic ret Required Storage Volume Botic ret Colspocin	(Min.)	(In./Hr.)	0.550	(Acres)	(cfs)	Inflow(cf)	Outflow(cf)	Storage(cf)	Storage(cy)
20 4.84 0.550 4.36 11.6 13914 7748 6167 228 40 3.29 0.550 4.36 7.9 18931 12175 6756 250 60 2.265 0.550 4.36 6.9 2002 14389 6213 230 199 70 2.30 0.550 4.36 5.5 23160 18816 4344 191 80 2.10 0.550 4.36 5.0 24183 21030 3159 117 90 1.94 0.550 4.36 6.6 Received formation intensity 6.6 116 139.4 774 618 223.4 1859 6.6 118 160.4 117 118 180.4 121	15	5.54	0.550	4.36	13.3	11958	6641	5317	197
30 3.89 0.30 4.30 9.3 10011 9901 6500 2.24 80 2.86 0.560 4.36 6.9 20602 14386 6273 230 80 2.265 0.560 4.36 6.9 20602 14386 6273 230 80 2.10 0.560 4.36 5.5 23160 18816 4344 161 80 2.10 0.560 4.36 5.0 24182 1030 3159 69 MODIFIED RATIONAL METHOD DETENTION CALCULATIONS 80 2.01 0.562 0.35 4.36 6.6 2010 5.80 0.75 32340 15.9 69 20.0 5.62 0.35 7.43 4.36 6.6 7.5 3260 1.7 1836 1.7 17.5 3062 1.8 1.17 50 1.8 1.6 1.38 1.6 1.5 1.6 1.5 1.6 1.5 1.6 1.6	20	4.84	0.550	4.36	11.6	13914	7748	6167	228
50 2.86 0.550 4.36 6.9 20002 14389 6213 230 70 2.30 0.650 4.36 5.5 23160 18816 4344 191 80 2.10 0.550 4.36 5.5 23160 18816 4344 191 80 2.10 0.550 4.36 5.6 24188 21030 3159 199 80 2.10 0.550 4.36 4.6 25103 23243 1859 69 MODIFIED RATIONAL METHOD DETENTION CALCULATIONS Read Distance - Perfored Q	40	3.89	0.550	4.36	7.9	18931	12175	6756	254
B0 2.85 0.850 4.36 6.1 2.198.3 1990.2 5.980.1 1991 B0 2.10 0.550 4.38 5.0 2.2108 2.316 1681 4.41 161 B0 2.10 0.550 4.38 5.0 2.4188 2.103 3.169 117 B0 1.94 0.550 4.38 4.6 2.510 2.2243 1659 69 MODDIFIED RATIONAL METHOD DETENTION CALCULATIONS ************************************	50	2.86	0.550	4.36	6.9	20602	14389	6213	230
80 2:10 0.550 4:38 5:0 24188 21030 3159 117 80 1.94 0.550 4:38 4:6 25103 23243 1859 69 MODIFIED RATIONAL METHOD DETENTION CALCULATIONS 23243 1859 69 25-yr DA - TB' C A Q Q Q Percention C A Q Percention Percention <th< td=""><td>60 70</td><td>2.55</td><td>0.550</td><td>4.36</td><td>6.1 5.5</td><td>21983</td><td>16602</td><td>5380 4344</td><td>199</td></th<>	60 70	2.55	0.550	4.36	6.1 5.5	21983	16602	5380 4344	199
80 1.94 0.850 4.38 4.6 25103 23243 1869 69 MODIFIED RATIONAL METHOD DETENTION CAL CULATIONS Ever Dariation Intensity C A Q Column Required Storage Volume Bodd Cu. Ft Builtion Intensity C A Q Cisit Required Storage Volume 8.6 cf Routed few OS-18 A 30.67 CFS Zeb Cu. Ft Zeb Cu. Ft 8.6 cf Recuired Storage Volume South CFS Time to Peak Tpeak Bodd Cu. Ft Zeb Cu. Ft 92eak Discharge - Post-Project A Quition Inflow(cf) Storage(cf) Storage(cf) <t< td=""><td>80</td><td>2.10</td><td>0.550</td><td>4.36</td><td>5.0</td><td>24188</td><td>21030</td><td>3159</td><td>117</td></t<>	80	2.10	0.550	4.36	5.0	24188	21030	3159	117
Bouted for:: OS-1 & A 30.67 CFS 20.80.4.74. Colspan="2">Colspan="2">Colspan="2">20.80.4.74. Colspan="2">Colspan="2">Colspan="2">Colspan="2">20.80.4.74. Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">20.80.4.74. Colspan="2">Colspan="2"Colspan	25-yr DA - "B" Peak Dischar	ge - Pre-Pro	NAL ME		DETEN	ITION CA	LCULATI	ONS	
8.6 cfs Total Release Rate: 39.24 CFS 0.18 a.ctt Peak Discharge - Post-Project ALLOWED 55.90 CFS Time to Peak/Tpeak) (Min.) (In,Hr.) C A Q 0 minutes 0uration Intensity C A Q 0 Storage(c) 15.0 0.42 0.55 4.38 15.4 0 Storage(c) 10 (n.H.) (In,Hr.) C (Acres) (cfs) Inflow(cf) Storage(c) Storage(c) 10 7.55 0.550 4.38 18.4 19684 6431 4433 164 115 6.42 0.550 4.38 10.9 19617 11575 8042 298 40 3.86 0.550 4.38 9.2 22164 14147 8017 297 50 3.36 0.550 4.36 6.5 2705 21864 5441 2433 70 2.71 0.550 4.36	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0	D RATIO ge - Pre-Pro Intensity (In./Hr.) 5.62	NAL ME	A (Acres) 4.36	Q (<u>cfs)</u> 8.6	ITION CA	LCULATI Requi	ONS red Storage	Volume
Peak Discharge - Post-Project A Q A A Q A Q A Q A Q A Q A A Q A A Q A A Q A A Q A A Q A A A Q A A Q A	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas	D RATIO	NAL ME	A (Acres) 4.36	Q (<u>(cfs)</u> 8.6 30.67	TION CA	LCULATI Requi	ONS ired Storage 8042 298	Volume 2 cu. Ft 3 cu. Yd.
Peak Discharge - Post-Project A Q Duration Intensity C (Acres) (cfs) 15.0 6.42 0.55 4.36 15.4 Total Inflow - Proposed Conditions (Acres) (cfs) Inflow(cf) Storage(cf) Storage(cf) Storage(cf) Storage(cf) 10 7.55 0.550 4.36 15.4 10864 6431 4433 164 15 6.42 0.550 4.36 15.4 10864 6431 4433 164 15 6.42 0.550 4.36 15.4 13858 7717 6141 227 20 5.62 0.550 4.36 16.5 12866 19617 11575 8042 298 40 3.85 0.550 4.36 8.1 24186 16720 7466 277 60 3.00 0.550 4.36 6.5 22964 27009 2886 99 MODIFIED RATIONAL METHOD DETENTION CALCULATIONS 0.23	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0	D RATIO	NAL ME	A (Acres) 4.36 :: OS-1 & A elease Rate:	Q (<u>cfs</u>) 8.6 30.67 39.24	CFS CFS	Requi	ONS ired Storage 8042 0.11	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft
Duration Intensity c A Q (Min.). (m./Hr.) 0.55 (4.36 15.4 Total Inflow - Proposed Conditions (Acres) (cfs) (min/Hr.) (Min.). (m./Hr.) C (Acres) (cfs) (min/Hr.) (Min.). (m./Hr.) C (Acres) (cfs) (min/Hr.) 10 7.55 0.550 4.36 16.4 13858 7717 6141 227 20 5.62 0.550 4.36 10.9 19617 11575 8042 298 40 3.85 0.550 4.36 10.9 19617 11575 8042 298 40 3.85 0.550 4.36 6.2 22164 14147 8017 297 60 3.00 0.550 4.36 6.2 225865 19292 6573 243 70 2.711 0.550 4.36 6.0 2868 24434 41311 153	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.6	D RATIO	NAL ME	A (Acres) 4.36 : OS-1 & A elease Rate: ALLOWED	Q (<u>cfs</u>) 8.6 30.67 39.24 55.90	CFS CFS CFS CFS	Requi	ONS ired Storage 804 299 0.11 ne to Peak(Tp 30	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft Deak) 0 minutes
15.0 6.42 0.55 4.36 15.4 Total Inflow - Proposed Conditions A Q Quration Intensity C A Q 10 7.55 0.550 4.36 18.1 100864 6431 4433 164 10 7.55 0.550 4.36 18.1 100864 6431 4433 164 20 5.62 0.550 4.36 13.5 16168 9003 7166 2277 60 3.36 0.550 4.36 8.1 24186 16720 7466 2777 60 3.00 0.550 4.36 6.5 27305 21844 6441 202 80 2.48 0.550 4.36 6.5 29694 27009 2886 99 MODIFIED RATIONAL METHOD DETENTION CALCULATIONS 10142 20.433 1153 90 2.29 0.551 4.36 10.53 Required Storage Volume 100/yr DA. "B" C A<	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar	D RATIO	NAL ME iect 0.35 Routed flow Total Re	A (Acres) 4.36 COS-1 & A blease Rate: ALLOWED	Q (cfs) 8.6 30.67 39.24 55.90	CFS CFS CFS CFS	Requi	ONS red Storage 804 299 0.11 ne to Peak(Tp 30	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft Deak) 0 minutes
Total Inflow - Proposed Conditions A Q Duration Intensity C A Q 10 7.55 0.550 4.36 16.1 10864 6431 4433 164 15 6.42 0.550 4.36 15.4 13858 7717 6141 227 20 5.62 0.550 4.36 15.4 13858 7717 6141 227 20 3.85 0.550 4.36 10.9 19617 11575 8042 298 40 3.85 0.550 4.36 8.1 24186 16720 7466 277 60 3.00 0.550 4.36 6.0 28568 1922 6673 243 70 2.71 0.550 4.36 6.0 28568 24436 4131 153 90 2.29 0.500 4.36 10.53 Required Storage Volume 10142 cu, Ft 10.4 /rd. (m.htht) C A	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.)	D RATIO	NAL ME	A (Acres) 4.36 COS-1 & A elease Rate: ALLOWED A (Acres)	Q (<u>cfs)</u> 8.6 30.67 39.24 55.90 Q (cfs)	CFS CFS CFS CFS	Requi	ONS ired Storage 8042 299 0.18 ne to Peak(Tp 30	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft Deak) 0 minutes
Total Inflow - Proposed Conditions A Q Inflow(cf) Storage(cf)	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0	D RATIO	NAL ME	A (Acres) 4.36 COS-1 & A Dease Rate: ALLOWED A (Acres) 4.36	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4	CFS CFS CFS CFS	Requi	ONS ired Storage 8042 299 0.11 ne to Peak(Tj 30	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft Deak) 0 minutes
Duration Intensity (m.h.) C A Q Outflow(cf) Storage(cf) Storage(cf) 10 7.55 0.550 4.36 18.1 10864 6431 4433 164 15 6.42 0.550 4.36 15.4 13858 7117 6141 227 20 5.62 0.550 4.36 10.9 19617 11575 8042 298 40 3.85 0.550 4.36 9.2 22164 14147 8017 297 60 3.00 0.550 4.36 6.5 27305 21864 5441 202 80 2.48 0.550 4.36 6.5 27305 21864 5441 202 80 2.48 0.550 4.36 6.5 27305 21864 5441 202 90 2.29 0.560 4.36 10.5 2060 2068 99 Output to the treat storage volume 100-yr DA -	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0	D RATIO	NAL ME	A (Acres) 4.36 COS-1 & A elease Rate: ALLOWED A (Acres) 4.36	Q (<u>cfs</u>) 8.6 30.67 39.24 55.90 Q (<u>cfs</u>) 15.4	CFS CFS CFS CFS	Requi	ONS ired Storage 804 299 0.11 ne to Peak(Tp 30	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft beak) 0 minutes
10 7.55 0.550 4.36 18.1 10864 6431 4433 184 15 6.42 0.550 4.36 15.4 1355 16168 9003 7166 265 30 4.54 0.550 4.36 10.9 19617 11575 8042 298 40 3.85 0.550 4.36 9.2 22164 14147 8017 297 60 3.00 0.550 4.36 6.5 27305 21864 5441 202 80 2.48 0.550 4.36 6.5 29694 2709 2886 99 MODIFIED RATIONAL METHOD DETENTION CALCULATIONS 10142 cu. Ft 1153 90 2.29 0.550 4.36 10.53 Required Storage Volume 100-yr DA - "B" C A Q (cfs) 10142 cu. Ft 376 cu. Yd. 0.23 a crt	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Total Inflow -	D RATIO	NAL ME	A (Acres) 4.36 COS-1 & A blease Rate: ALLOWED A (Acres) 4.36	Q (<u>cfs</u>) 8.6 30.67 39.24 55.90 Q (<u>cfs</u>) 15.4	CFS CFS CFS CFS	Requi	ONS ired Storage 804 299 0.11 ne to Peak(Tp 30	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft Deak) 0 minutes
io 0.42 0.500 4.36 15.4 13858 7717 6141 227 20 5.62 0.550 4.36 10.9 19617 11575 8042 298 40 3.85 0.550 4.36 9.2 22164 14147 8017 297 60 3.00 0.550 4.36 7.2 25865 19292 6573 243 70 2.71 0.550 4.36 6.5 27305 21864 5441 202 80 2.48 0.550 4.36 6.5 29694 27009 2686 99 MODIFIED RATIONAL METHOD DETENTION CALCULATIONS 100-yr DA - "B" C A Q (cfs) 10142 cu. Ft 20.0 6.90 0.35 4.36 10.53 Required Storage Volume 0.23 acrt 10.5 cfs Routed flow:OS-1 & "A' 37.66 CFS 376 cu. Yd. 0.23 acrt 20.0 6.90 0.35 4.36 <	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.6 Peak Dischar Duration (Min.) 15.0 Total Inflow - Duration (Min.)	D RATIO	NAL ME	A (Acres) 4.36 COS-1 & A blease Rate: ALLOWED A (Acres) 4.36 A (Acres)	Q (<u>cfs</u>) 8.6 30.67 39.24 55.90 Q (<u>cfs</u>) 15.4 Q (<u>cfs</u>)	CFS CFS CFS CFS	CULATI Requi	ONS red Storage 8042 299 0.11 ne to Peak(Tp 30	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft Deak) 0 minutes
30 4.54 0.550 4.36 10.9 19617 11575 8042 288 40 3.85 0.550 4.36 9.2 22164 14147 8017 297 50 3.36 0.550 4.36 8.1 24186 16720 7466 277 60 3.00 0.550 4.36 6.5 27305 21864 5441 202 80 2.48 0.550 4.36 6.5 27305 21864 5411 202 80 2.48 0.550 4.36 6.5 27305 21864 4131 153 90 2.29 0.550 4.36 10.53 Required Storage Volume 700 2.00 2000 6.90 0.35 4.36 10.53 Required Storage Volume 100-yr DA - "B" C A Q C A Q 10142 cu. Ft 37.66 CFS 10142 cu. Ft 37.66 CFS 10142 cu. Ft 37.66 CFS	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Total Inflow - Duration (Min.) 15.0	D RATIO	NAL ME	A (Acres) 4.36 COS-1 & A Delease Rate: ALLOWED A (Acres) 4.36 A (Acres) 4.36	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 Q (cfs) 18.1	CFS CFS CFS CFS <u>Inflow(cf)</u> 10864	CULATI Requi	ONS red Storage 8042 299 0.12 ne to Peak(Tp 30 Storage(cf) 4433	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft beak) 0 minutes 164
40 3.85 0.550 4.36 9.2 22164 14147 8017 297 50 3.36 0.550 4.36 8.1 24186 16720 7466 277 60 3.00 0.550 4.36 6.5 27305 21884 5441 202 80 2.48 0.550 4.36 6.0 28568 24436 4131 153 90 2.29 0.550 4.36 6.5 26964 27009 2686 99 Pre-Project D0-yr DA - "B"	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Total Inflow - Duration (Min.) 15.0	D RATIO	NAL ME	A (Acres) 4.36 2: OS-1 & A blease Rate: ALLOWED A (Acres) 4.36 A (Acres) 4.36 A (Acres) 4.36 A (Acres) 4.36 4.36 4.36	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 Q (cfs) 15.4 15.4 15.4 15.4 15.4	TIONCA CFS CFS CFS CFS <u>Inflow(cf)</u> 10864 13858 16168	CULATI Requi	ONS ired Storage 804; 299 0.18 ine to Peak(Tr 30 30 30 30 4433 6141 7166	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft beak) 0 minutes 0 minutes 164 227 265
60 3.00 0.550 4.36 7.2 25865 19292 6573 243 70 2.71 0.550 4.36 6.5 27305 21864 5441 202 80 2.48 0.550 4.36 6.0 28568 24436 4131 153 90 2.29 0.550 4.36 6.0 28568 24436 4131 153 90 2.29 0.550 4.36 5.5 29694 27009 2686 99 MODIFIED RATIONAL METHOD DETENTION CALCULATIONS 100-yr DA - "B" - <t< td=""><td>MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Total Inflow - Duration (Min.) 15 20 30</td><td>D RATIO</td><td>NAL ME iect C 0.35 Routed flow Total Re Diect C 0.55 onditions C 0.550</td><td>A (Acres) 4.36 : OS-1 & A ease Rate: ALLOWED A (Acres) 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36</td><td>Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 Q (cfs) 15.4 15.4 15.4 15.4 13.5 10.9</td><td>TIONCA CFS CFS CFS CFS <u>Inflow(cf)</u> 10864 13858 16168 19617</td><td>Cutflow(cf) 6431 7717 9003 11575</td><td>ONS red Storage 8042 299 0.18 ne to Peak(Tp 30 30 30 30 30 30 30 30 30 30</td><td>Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft beak) 0 minutes 0 minutes 164 227 265 298</td></t<>	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Total Inflow - Duration (Min.) 15 20 30	D RATIO	NAL ME iect C 0.35 Routed flow Total Re Diect C 0.55 onditions C 0.550	A (Acres) 4.36 : OS-1 & A ease Rate: ALLOWED A (Acres) 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 Q (cfs) 15.4 15.4 15.4 15.4 13.5 10.9	TIONCA CFS CFS CFS CFS <u>Inflow(cf)</u> 10864 13858 16168 19617	Cutflow(cf) 6431 7717 9003 11575	ONS red Storage 8042 299 0.18 ne to Peak(Tp 30 30 30 30 30 30 30 30 30 30	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft beak) 0 minutes 0 minutes 164 227 265 298
ro 2.r1 0.500 4.36 6.5 27305 21884 5441 202 80 2.48 0.550 4.36 6.0 28568 24436 4131 153 90 2.29 0.550 4.36 6.5 29694 27009 2686 99 MODIFIED RATIONAL METHOD DETENTION CALCULATIONS 100-yr DA - "B"	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Fotal Inflow - Duration (Min.) 15.20 Total Inflow - Duration (Min.) 15.20 30 40 50	D RATIO	NAL ME iect C 0.35 Routed flow Total Re Diect C 0.55 conditions C 0.550	A (Acres) 4.36 4.36 COS-1 & A blease Rate: ALLOWED A (Acres) 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 (cfs) 15.4 15.4 15.4 13.5 10.9 9.2 8.1	CFS CFS CFS CFS CFS	Outflow(cf) 6431 7717 9003 11575 14147 16720	ONS red Storage 8042 299 0.11 ne to Peak(T) 30 Storage(cf) 4433 6141 7166 8042 8017 7466	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft beak) 0 minutes 1 64 227 265 298 297 277
90 2.29 0.550 4.36 5.5 29694 27009 2688 99 MODIFIED RATIONAL METHOD DETENTION CALCULATIONS 100-yr DA - "B" Peak Discharge - Pre-Project C A Q C A Q Duration Intensity C A Q C A Q 20.0 6.90 0.35 4.36 10.53 Required Storage Volume 20.0 6.90 0.35 4.36 10.53 Required Storage Volume 10.5 cfs Routed flow: OS-1 & "A" 37.66 CFS 376 cu. Yd. ALLOWED 55.90 CFS Time to Peak(Tpeak) 20 ac.ft ALLOWED 55.90 CFS Time to Peak(Tpeak) 20 ac.ft C A Q Q A Q 20 ac.ft C A Q Q A Q A 20 ac.ft C A Q Q A Q A Q	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Total Inflow - Duration (Min.) 15.0 Total Inflow - Duration (Min.) 15.0 Total Schar 0 0 0 0 0 0 0 0 0 0 0 0 0	D RATIO	C 0.35 Routed flow Total Re 0.55 c 0.55 c 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550	A (Acres) 4.36 4.36 * OS-1 & A elease Rate: ALLOWED A (Acres) 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36 4.36	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 Q (cfs) 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4	CFS CFS CFS CFS CFS inflow(cf) 10864 13858 16168 19617 22164 24186 25865	Cutflow(cf) 6431 7717 9003 11575 14147 16720 19292	ONS red Storage 8042 299 0.11 ne to Peak(T) 30 Storage(cf) 4433 6141 7166 8042 8017 7466 6573	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft beak) 0 minutes 164 227 265 298 297 277 243
MODIFIED RATIONAL METHOD DETENTION CALCULATIONS 100-yr DA - "B" 2000 2000 1000 (In./Hr.) C A Q C C A Q C C A Q C C A Q C C A Q C C A Q C A Q C	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Total Inflow - Duration (Min.) 15.0 Total Inflow - Duration (Min.) 15.0 Total Inflow - 0 0 0 0 0 0 0 0 0 0 0 0 0	D RATIO	C 0.35 Routed flow Total Re Diect C 0.55 C 0.55 C 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550	A (Acres) 4.36 4.36 COS-1 & A ease Rate: ALLOWED A (Acres) 4.36	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 Q (cfs) 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4	TIONCA CFS CFS CFS CFS CFS inflow(cf) 10864 13858 16168 19617 22164 24186 25865 27305 28568	Cutflow(cf) 6431 7717 9003 11575 14147 16720 19292 21864 24436	ONS ired Storage 8042 299 0.11 ine to Peak(Tr 30 30 30 30 30 30 30 30 30 30	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft beak) 0 minutes 1 164 227 265 298 297 277 243 202 153
Note in LD in the international intensity (Min.) C A Q Duration Intensity (Min.) C A Q 10142 cu. Ft 20.0 6.90 0.35 4.36 10.53 Required Storage Volume 10142 cu. Ft 37.66 CFS 37.66 cu. Yd. 0.23 ac-ft 10.5 cfs Routed flow: OS-1 & "A" 37.66 CFS 37.66 cu. Yd. 10.5 cfs ALLOWED 55.90 CFS Time to Peak(Tpeak) 20 ac ft ALLOWED 55.90 CFS Time to Peak(Tpeak) 20 ac ft ALLOWED 55.90 CFS Time to Peak(Tpeak) 20 ac ft C A Q 0.23 ac-ft 20 ac ft 0.55 4.36 18.8 AREA B 20 ac ft 0.550 4.36 18.8 AREA B 5332 </td <td>MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Total Inflow - Duration (Min.) 15.20 Total 15 20 30 40 50 60 70 80 90</td> <td>D RATIO</td> <td>NAL ME iect C 0.35 Routed flow Total Re oiect C 0.55 0.550 0</td> <td>A (Acres) 4.36 4.36 COS-1 & A ease Rate: ALLOWED A (Acres) 4.36</td> <td>Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 (cfs) 15.4 Q (cfs) 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4</td> <td>TIONCA CFS CFS CFS CFS CFS inflow(cf) 10864 13858 16168 19617 22164 24186 25865 27305 28568 29694</td> <td>ECULATI Requi</td> <td>ONS red Storage 0.11 ne to Peak(T) 3(3(5(1) 4433 6141 7166 8042 8017 7466 6573 5441 4131 2686</td> <td>Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft beak) 0 minutes 1 164 227 265 298 297 277 243 202 153 99</td>	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Total Inflow - Duration (Min.) 15.20 Total 15 20 30 40 50 60 70 80 90	D RATIO	NAL ME iect C 0.35 Routed flow Total Re oiect C 0.55 0.550 0	A (Acres) 4.36 4.36 COS-1 & A ease Rate: ALLOWED A (Acres) 4.36	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 (cfs) 15.4 Q (cfs) 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4	TIONCA CFS CFS CFS CFS CFS inflow(cf) 10864 13858 16168 19617 22164 24186 25865 27305 28568 29694	ECULATI Requi	ONS red Storage 0.11 ne to Peak(T) 3(3(5(1) 4433 6141 7166 8042 8017 7466 6573 5441 4131 2686	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft beak) 0 minutes 1 164 227 265 298 297 277 243 202 153 99
Detak Discharge - Pre-Project A Q A A Q A A Q A A Q A A A A C A	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Total Inflow - Duration (Min.) 15.0 Total Inflow - Duration (Min.) 15.0 Total Inflow - Duration (Min.) 10 15 20 30 40 50 60 70 80 90	D RATIO	C 0.35 Routed flow Total Re oject C 0.55 onditions C 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550	A (Acres) 4.36 4.36 COS-1 & A blease Rate: ALLOWED A (Acres) 4.36	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 0 (cfs) 15.4 15.4 15.4 15.4 13.5 10.9 9.2 8.1 7.2 6.5 6.0 5.5	CFS CFS CFS CFS CFS CFS inflow(cf) 10864 13858 16168 19617 22164 24186 25865 27305 28568 27305 28568 29694	CULATI	ONS red Storage 8042 299 0.11 ne to Peak(T) 30 Storage(cf) 4433 6141 7166 8042 8017 7466 6573 5441 4131 2686	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft beak) 0 minutes 4 Storage(cy) 164 227 265 298 297 277 243 202 153 99
Curation Interisty (Min.) C A Q Construction Required Storage Volume 20.0 6.90 0.35 4.36 10.53 Required Storage Volume 20.0 6.90 0.35 4.36 10.53 Required Storage Volume 10142 cu. Ft 10142 cu. Ft 376 cu. Yd. 376 cu. Yd. 376 cu. Yd. 10.5 cfs Total Release Rate: 48.19 CFS 0.23 ac-ft 0.23 ac-ft Peak Discharge - Post-Project ALLOWED 55.90 CFS Time to Peak(Tpeak) 40 minutest Q (Min.) (in./Hr.) C A Q 10.5 10.5 10.5 15.0 7.86 0.55 4.36 18.8 AREA B 10.5	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Total Inflow - Duration (Min.) 15.0 Total Inflow - Duration (Min.) 15.0 Total Inflow - 0 0 0 0 0 0 0 0 0 0 0 0 0	D RATIO	C 0.35 Routed flow Total Re Diect C 0.55 conditions C 0.550	A (Acres) 4.36 4.36 COS-1 & A blease Rate: ALLOWED A (Acres) 4.36	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 Q (cfs) 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4	Inflow(cf) 10864 13858 16168 19617 22164 24186 25865 27305 28568 29694	LCULATI Requi Tin Outflow(cf) 6431 7717 9003 11575 14147 16720 19292 21864 24436 27009 LCULATI	ONS ired Storage 8042 299 0.13 ine to Peak(Tr 30 Storage(cf) 4433 6141 7166 8042 8017 7466 6573 5441 4131 2686 ONS	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft beak) 0 minutes 4 Storage(cy) 164 227 265 298 297 277 243 202 153 99
20.0 6.90 0.35 4.36 10.53 Required Storage Volume Release Rate 10.5 cfs Routed flow: OS-1 & "A" 37.66 CFS 376 cu. Yd. 0.23 ac-ft C ALLOWED 55.90 CFS Time to Peak(Tpeak) Ouration Intensity (Min.) C A Q 4.36 18.8 AREA B Ouration Intensity (Min.) C A Q Outed flow: OS-1 C A Q Min.) (In./Hr.) C A Q Outed flow: OS-1 C C C <td>MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Total Inflow - Duration (Min.) 15 20 30 40 50 60 70 80 90 MODIFIE 100-yr DA - "B Peak Dischar</td> <td>D RATIO</td> <td>C 0.35 Routed flow Total Re Diect C 0.55 onditions C 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550</td> <td>A (Acres) 4.36 2: OS-1 & A ease Rate: ALLOWED A (Acres) 4.36</td> <td>Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 Q (cfs) 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4</td> <td>CFS CFS CFS CFS CFS inflow(cf) 10864 13858 16168 19617 22164 24186 25865 27305 28568 29694 XTION CA</td> <td>LCULATI Requi</td> <td>ONS ired Storage 8042 299 0.11 ine to Peak(Tr 30 30 30 30 30 30 30 30 30 30</td> <td>Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft beak) 0 minutes 164 227 265 298 297 277 243 202 153 99</td>	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Total Inflow - Duration (Min.) 15 20 30 40 50 60 70 80 90 MODIFIE 100-yr DA - "B Peak Dischar	D RATIO	C 0.35 Routed flow Total Re Diect C 0.55 onditions C 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550	A (Acres) 4.36 2: OS-1 & A ease Rate: ALLOWED A (Acres) 4.36	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 Q (cfs) 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4	CFS CFS CFS CFS CFS inflow(cf) 10864 13858 16168 19617 22164 24186 25865 27305 28568 29694 XTION CA	LCULATI Requi	ONS ired Storage 8042 299 0.11 ine to Peak(Tr 30 30 30 30 30 30 30 30 30 30	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft beak) 0 minutes 164 227 265 298 297 277 243 202 153 99
Release Rate 10.5 cfs Routed flow: OS-1 & "A" Total Release Rate: 37.66 CFS 376 cu. Yd. 10.5 cfs Total Release Rate: 48.19 CFS 0.23 ac-ft ALLOWED 55.90 CFS Time to Peak(Tpeak) Peak Discharge - Post-Project ALLOWED 55.90 CFS Time to Peak(Tpeak) Ouration Intensity (Min.) (h./Hr.) C A Q 40 minutes 15.0 7.86 0.55 4.36 18.8 AREA B	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Total Inflow - Duration (Min.) 15 20 30 40 50 60 70 80 90 MODIFIE 100-yr DA - "B Peak Dischar Duration (Min.)	D RATIO	C 0.35 Routed flow Total Re Diect C 0.55 onditions C 0.550	HOD C A (Acres) 4.36 : OS-1 & A ease Rate: ALLOWED A (Acres) 4.36 <	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 Q (cfs) 15.4 15.4 15.4 15.4 15.4 13.5 10.9 9.2 8.1 7.2 6.5 6.0 5.5 0ETEN Q (cfs)	CFS CFS CFS CFS CFS CFS Inflow(cf) 10864 13858 16168 19617 22164 24186 25865 27305 28568 29694	LCULATI Requi	ONS red Storage 0.11 ne to Peak(T) 30 Storage(cf) 4433 6141 7166 8042 8017 7466 6573 5441 4131 2686 ONS	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft beak) 0 minutes 1 64 227 265 298 297 277 243 202 153 99
10.5 cfs Total Release Rate: 48.19 CFS 0.23 ac-ft ALLOWED 55.90 CFS Time to Peak(Tpeak) Peak Discharge - Post-Project A Q 40 minutes Ouration Intensity (Min.) (In./Hr.) C A Q 40 minutes 15.0 7.86 0.55 4.36 18.8 AREA B	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Fotal Inflow - Duration (Min.) 10 15 20 30 40 50 60 70 80 90 MODIFIE Duration (Min.) 20.0	D RATIO	C 0.35 Routed flow Total Re 0.55 0.55 0.550	HOD C A (Acres) 4.36 • <	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 0 Q (cfs) 18.1 15.4 13.5 10.9 9.2 8.1 7.2 6.5 6.0 5.5 0 ETEN Q (cfs) 10.53	CFS CFS CFS CFS CFS CFS CFS Inflow(cf) 10864 13858 16168 19617 22164 24186 25865 27305 28568 29694	LCULATI Requi	ONS red Storage 8042 292 0.11 ne to Peak(T) 4433 6141 7166 8042 8017 7466 6573 5441 4131 2686 ONS ONS	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft beak) 0 minutes 1 64 227 265 298 297 277 243 202 153 99 Volume 2 cu. Ft
ALLOWED 55.90 CFS Time to Peak(Tpeak) Peak Discharge - Post-Project A Q A A A A A A A A A A A A A A A C A A C A A Q A C A A Q A C A A Q A A A A A A A A A A	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Total Inflow - Duration (Min.) 10 15 20 30 40 50 60 70 80 90 MODIFIE 100-yr DA - "B Peak Dischar Duration (Min.) 20.0	D RATIO ge - Pre-Pro Intensity (In./Hr.) 5.62 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 6.42 Proposed C Intensity (In./Hr.) 7.55 6.42 5.62 4.54 3.85 3.36 3.00 2.71 2.48 2.29 D RATIO " ge - Pre-Pro Intensity (In./Hr.) 6.90 e Rate	C 0.35 Routed flow Total Re Diect C 0.55 conditions C 0.550 0.35 Routed flow	A (Acres) 4.36 (Acres) 4.36 (Acres) A (Acres) 4.36 (Acres) 4.36 (Acres) 4.36 5 6 6 7 8 9 10	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 Q (cfs) 15.4 3.1 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15	CFS CFS CFS CFS CFS CFS CFS CFS <u>Inflow(cf)</u> 10864 13858 16168 19617 22164 24186 25865 27305 28568 27305 28568 29694 XTION CA	LCULATI Requi	ONS ired Storage 0.13 ine to Peak(Tr 30 5441 4433 6141 7166 8042 8017 7466 6573 5441 4131 2686 ONS ONS	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft beak) 0 minutes 4 Storage(cy) 164 227 265 298 297 277 243 202 153 99 Volume 2 cu. Ft 6 cu. Yd.
Peak Discharge - Post-Project A Q A Q $(Min.)$ $(In./Hr.)$ C $(Acres)$ (cfs)	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Fotal Inflow - Duration (Min.) 15.0 Fotal Inflow - Duration (Min.) 15.0 Fotal Inflow - Duration (Min.) 10 15 20 30 40 50 60 70 80 90 MODIFIE 00-yr DA - "B Peak Dischar Duration (Min.) 20.0 Releas 10.2 Conterments of the second Conterment	D RATIO	C 0.35 Routed flow Total Re Diect C 0.55 onditions C 0.550 Routed flow Total Re	A (Acres) 4.36 4.36 COS-1 & A ease Rate: ALLOWED A (Acres) 4.36	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 Q (cfs) 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4	CFS CFS CFS CFS CFS CFS CFS CFS <u>Inflow(cf)</u> 10864 13858 16168 19617 22164 24186 25865 27305 28568 29694 XTION CA	CutATI Requi Tin 0	ONS ired Storage 0.11 ine to Peak(T) 30 Storage(cf) 4433 6141 7166 8042 8017 7466 6573 5441 4131 2686 ONS ONS ired Storage 1014 37 0.2	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft Deak) 0 minutes 1 164 227 265 298 297 277 243 202 153 99 Volume 2 cu. Ft 6 cu. Yd. 3 ac-ft
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Total Inflow - Duration (Min.) 15 20 30 40 50 60 70 80 90 MODIFIE 100-yr DA - "B Peak Dischar Duration (Min.) 20.0 Releas 10.2 10.	D RATIO ge - Pre-Pro Intensity (In./Hr.) 5.62 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 6.42 Proposed C Intensity (In./Hr.) 7.55 6.42 5.62 4.54 3.85 3.36 3.00 2.71 2.48 2.29 D RATIO " ge - Pre-Pro Intensity (In./Hr.) 6.90 *	C 0.35 Routed flow Total Re 0.55 0.550 Routed flow Total Re	A (Acres) 4.36 4.36 COS-1 & A ease Rate: ALLOWED A (Acres) 4.36	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 Q (cfs) 15.4 15.4 13.5 10.9 9.2 8.1 7.2 6.5 6.0 5.5 DETEN Q (cfs) 10.53 37.66 48.19 55.90	CFS CFS CFS CFS CFS CFS CFS <u>Inflow(cf)</u> 10864 13858 16168 <u>19617</u> 22164 24186 25865 27305 28568 29694 NTION CA NTION CA	LCULATI Requi Tin Outflow(cf) 6431 7717 9003 11575 14147 16720 19292 21864 24436 27009 LCULATI Requi Requi	ONS red Storage 0.11 ne to Peak(T) 30 Storage(cf) 4433 6141 7166 8042 8017 7466 6573 5441 4131 2686 ONS ONS ired Storage 1014 37 0.2 ne to Peak(T) 4433 1014	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft Deak) 0 minutes 2 cu. Ft 3 cu. Yd. 3 ac-ft 2 cu. Ft 2 cu. Ft 6 cu. Yd. 3 ac-ft 99 Volume 2 cu. Ft 6 cu. Yd. 3 ac-ft peak) 0 minutes
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Total Inflow - Duration (Min.) 10 15 20 30 40 50 60 70 80 90 MODIFIE 100-yr DA - "B Peak Dischar Duration (Min.) 20.0 Releas 10.5 20.0	D RATIO	C 0.35 Routed flow Total Re 0.55 onditions C 0.550 Routed flow Total Re 0ject	A (Acres) 4.36 (Acres) 4.36 (Acres) A (Acres) 4.36 (Acres) 4.36 (Acres) 4.36	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 0 Q (cfs) 18.1 15.4 13.5 10.9 9.2 8.1 7.2 6.5 6.0 5.5 0 ETEN Q (cfs) 10.53 37.66 48.19 55.90	CFS CFS CFS CFS CFS CFS CFS CFS 27305 28568 29694 CFS CFS CFS CFS CFS CFS	LCULATI Requi	ONS red Storage 8042 299 0.11 ne to Peak(T) 30 Storage(cf) 4433 6141 7166 8042 8017 7466 6573 5441 4131 2686 ONS ONS ired Storage 1014 37 0.2 ne to Peak(T) 4433 5441 4131 2686	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft beak) 0 minutes 2 5torage(cy) 164 227 265 298 297 277 243 202 153 99 Volume 2 cu. Ft 6 cu. Yd. 3 ac-ft peak) 0 minutes
A A Q Inflow - Proposed Conditions Duration Intensity C A Q Outflow(cf) Storage(cf)	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Total Inflow - Duration (Min.) 10 15 20 30 40 50 60 70 80 90 MODIFIE 100-yr DA - "B Peak Dischar Duration (Min.) 20.0 Releas 10.5	D RATIO	NAL ME ie ct C 0.35 Routed flow Total Re Diect C 0.55 onditions C 0.550 0.35 Routed flow Total Re Diect C 0.35	A (Acres) 4.36 4.36 COS-1 & A Jease Rate: ALLOWED A (Acres) 4.36	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 Q (cfs) 15.4 4 3.5 10.9 9.2 8.1 7.2 6.5 6.0 5.5 0 ETEN Q (cfs) 10.53 37.66 48.19 55.90 Q (cfs)	CFS CFS CFS CFS CFS Inflow(cf) 10864 13858 16168 19617 22164 24186 25865 27305 28568 29694	Requi Tin Outflow(cf) 6431 7717 9003 11575 14147 16720 19292 21864 24436 27009	ONS ired Storage 0.11 ine to Peak(T) 4433 6141 7166 8042 8017 7466 6573 5441 4131 2686 ONS ired Storage 1014 37 0.2 ne to Peak(T) 44	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft Deak) 0 minutes 4 2 Storage(cy) 164 227 265 298 297 277 243 202 153 99 Volume 2 cu. Ft 6 cu. Yd. 3 ac-ft peak) 0 minutes
Fotal Inflow - Proposed Conditions A Q C A Q (Min.) Intensity C (Acres) (cfs) Inflow(cf) Outflow(cf) Storage(cf) Storage(cy) 10 9.20 0.550 4.36 22.1 13230 7898 5332 197 15 7.86 0.550 4.36 18.8 16955 9478 7477 277 20 6.90 0.550 4.36 18.8 16955 9478 7477 277 20 6.90 0.550 4.36 16.5 19858 11057 8801 326 30 5.62 0.550 4.36 13.5 24240 14216 10024 371 40 4.78 0.550 4.36 10.0 30145 20535 9610 356 50 4.19 0.550 4.36 9.0 32345 23694 8651 320 70 3.40 0.550 4.36 7.	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Fotal Inflow - Duration (Min.) 10 15 20 30 40 50 60 70 80 90 MODIFIE 00-yr DA - "B Peak Dischar Duration (Min.) 20.0 Releas 10.5	D RATIO ge - Pre-Pro Intensity (In./Hr.) 5.62 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 6.42 Proposed C Intensity (In./Hr.) 7.55 6.42 5.62 4.54 3.85 3.36 3.00 2.71 2.48 2.29 D RATIO Intensity (In./Hr.) 6.90 URATIO ge - Pre-Pro Intensity (In./Hr.) 6.90 URATIO Second Seco	NAL ME ie ct C 0.35 Routed flow Total Re oie ct C 0.55 onditions C 0.550 Routed flow Total Re 0.550 0.550	HOD C A (Acres) 4.36 4.36 A (Acres) 4.36 A (Acres) 4.36 A (Acres) 4.36 A (Acres) 4.36 Costa Rate: ALLOWED A (Acres) 4.36	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 Q (cfs) 15.4 15.4 13.5 10.9 9.2 8.1 7.2 6.5 6.0 5.5 0ETEN Q (cfs) 10.53 37.66 48.19 55.90 Q (cfs) 10.53	CFS CFS CFS CFS CFS CFS Inflow(cf) 10864 13858 16168 19617 22164 24186 25865 27305 28568 29694	LCULATI Requi	ONS ired Storage 0.11 ne to Peak(T) 30 31 31 31 31 31 31 31 31 31 31	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft Deak) 0 minutes 2 storage(cy) 164 227 265 298 297 277 243 202 153 99 Volume 2 cu. Ft 6 cu. Yd. 3 ac-ft peak) 0 minutes
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Total Inflow - Duration (Min.) 10 15 20 30 40 50 60 70 80 90 MODIFIE 100-yr DA - "B Peak Dischar Duration (Min.) 20.0 Releas 10.5 Peak Dischar Duration (Min.) 20.0	D RATIO ge - Pre-Pro Intensity (In./Hr.) 5.62 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 6.42 Proposed C Intensity (In./Hr.) 7.55 6.42 5.62 4.54 3.85 3.36 3.00 2.71 2.48 2.29 D RATIO " ge - Pre-Pro Intensity (In./Hr.) 6.90 e Rate 5 cfs	NAL ME iect C 0.35 Routed flow Total Re Diect C 0.55 0.550 0.550 0.550 0.35 Routed flow Total Re 0.55 0.55	A (Acres) 4.36 4.36 COS-1 & A blease Rate: ALLOWED A (Acres) 4.36 (Acres) 4.36 COS-1 & "A' ease Rate: ALLOWED A (Acres) 4.36	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 0 Q (cfs) 15.4 15.4 13.5 10.9 9.2 8.1 7.2 6.5 6.0 5.5 0 ETEN Q (cfs) 10.53 37.66 48.19 55.90 Q (cfs) 10.53 37.66 48.19 55.90	Imployee CFS CFS CFS CFS CFS CFS Imployee Imployee	LCULATI Requi	ONS red Storage 8042 292 0.11 ne to Peak(T) 4433 6141 7166 8042 8017 7466 6573 5441 4131 2686 ONS ONS ired Storage 1014 37 0.2 ne to Peak(T) 443 4131 2686	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft beak) 0 minutes 2 5torage(cy) 164 227 265 298 297 277 243 202 153 99 Volume 2 cu. Ft 6 cu. Yd. 3 ac-ft peak) 0 minutes
Min.r Min.rin.r Min.rin.r Min.rin.r Min.rin.r Storage(Cr) Storage	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Total Inflow - Duration (Min.) 10 15 20 30 40 50 60 70 80 90 MODIFIE 100-yr DA - "B Peak Dischar Duration (Min.) 20.0 Releas 10.5 Peak Dischar Duration (Min.) 15.0	D RATIO ge - Pre-Pro Intensity (In./Hr.) 5.62 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 6.42 Proposed C Intensity (In./Hr.) 7.55 6.42 5.62 4.54 3.85 3.36 3.00 2.71 2.48 2.29 D RATIO " ge - Pre-Pro Intensity (In./Hr.) 6.90 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 7.86 100 100 100 100 100 100 100 10	NAL ME iect C 0.35 Routed flow Total Re Diect C 0.55 Onditions C 0.550 0.35 Routed flow Total Re Dect C 0.55 C 0.55 C 0.55 0.55	A (Acres) 4.36 4.36 (Acres) 4.36 A (Acres) 4.36 A (Acres) 4.36 A (Acres) 4.36 Cores) 4.36 4.36	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 Q (cfs) 15.4 15.4 9.2 8.1 7.2 6.5 6.0 5.5 0 ETEN Q (cfs) 10.53 37.66 48.19 55.90 Q (cfs) 10.53	Inflow(cf) 10864 13858 16168 19617 22164 24186 25865 27305 28568 29694	LCULATI Requi	ONS ired Storage 0.11 ne to Peak(T) 4433 6141 7166 8042 8017 7466 6573 5441 4131 2686 ONS ONS ired Storage 1014 37 0.2 ne to Peak(T) 44 37 0.2	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft Deak) D minutes 4 Storage(cy) 164 227 265 298 297 277 243 202 153 99 Volume 2 cu. Ft 6 cu. Yd. 3 ac-ft peak) D minutes
15 7.86 0.550 4.36 18.8 16955 9478 7477 277 20 6.90 0.550 4.36 16.5 19858 11057 8801 326 30 5.62 0.550 4.36 13.5 24240 14216 10024 371 40 4.78 0.550 4.36 11.5 27518 17376 10142 376 50 4.19 0.550 4.36 10.0 30145 20535 9610 356 60 3.75 0.550 4.36 9.0 32345 23694 8651 320 70 3.40 0.550 4.36 7.5 35917 30012 5905 219 90 2.89 0.550 4.36 6.0 27449 22470 4047 407	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Total Inflow - Duration (Min.) 10 15 20 30 40 50 60 70 80 90 MODIFIE 100-yr DA - "B Peak Dischar Duration (Min.) 20.0 Releas 10.5 Peak Dischar Duration (Min.) 15.0 Total Inflow - Duration (Min.) 15.0 <td>D RATIO ge - Pre-Pro Intensity (In./Hr.) 5.62 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 6.42 Proposed C Intensity (In./Hr.) 7.55 6.42 5.62 4.54 3.85 3.36 3.00 2.71 2.48 2.29 D RATIO " ge - Pre-Pro Intensity (In./Hr.) 6.90 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 6.90 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 7.86 Proposed C Intensity (In./Hr.) 7.86</td> <td>NAL ME ie ct C 0.35 Routed flow Total Re Die ct C 0.55 onditions C 0.550</td> <td>A (Acres) 4.36 4.36 COS-1 & A Idease Rate: ALLOWED A (Acres) 4.36</td> <td>Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 Q (cfs) 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4</td> <td>Implom CA CFS CFS CFS CFS CFS Implom(cf) 10864 13858 16168 19617 22164 24186 25865 27305 28568 29694</td> <td>Requi Tin Outflow(cf) 6431 7717 9003 11575 14147 16720 19292 21864 24436 27009</td> <td>ONS ired Storage 0.11 ne to Peak(T) 4433 6141 7166 8042 8017 7466 6573 5441 4131 2686 ONS ONS ired Storage 1014 37 0.2 ne to Peak(T) 44 37 0.2 1014</td> <td>Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft Deak) 0 minutes 2 storage(cy) 164 227 265 298 297 277 243 202 153 99 Volume 2 cu. Ft 6 cu. Yd. 3 ac-ft peak) 0 minutes 4 storage(cy) 164 227 265 298 297 277 243 202 153 99</td>	D RATIO ge - Pre-Pro Intensity (In./Hr.) 5.62 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 6.42 Proposed C Intensity (In./Hr.) 7.55 6.42 5.62 4.54 3.85 3.36 3.00 2.71 2.48 2.29 D RATIO " ge - Pre-Pro Intensity (In./Hr.) 6.90 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 6.90 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 7.86 Proposed C Intensity (In./Hr.) 7.86	NAL ME ie ct C 0.35 Routed flow Total Re Die ct C 0.55 onditions C 0.550	A (Acres) 4.36 4.36 COS-1 & A Idease Rate: ALLOWED A (Acres) 4.36	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 Q (cfs) 15.4 15.4 15.4 15.4 15.4 15.4 15.4 15.4	Implom CA CFS CFS CFS CFS CFS Implom(cf) 10864 13858 16168 19617 22164 24186 25865 27305 28568 29694	Requi Tin Outflow(cf) 6431 7717 9003 11575 14147 16720 19292 21864 24436 27009	ONS ired Storage 0.11 ne to Peak(T) 4433 6141 7166 8042 8017 7466 6573 5441 4131 2686 ONS ONS ired Storage 1014 37 0.2 ne to Peak(T) 44 37 0.2 1014	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft Deak) 0 minutes 2 storage(cy) 164 227 265 298 297 277 243 202 153 99 Volume 2 cu. Ft 6 cu. Yd. 3 ac-ft peak) 0 minutes 4 storage(cy) 164 227 265 298 297 277 243 202 153 99
20 0.50 4.36 16.5 19858 11057 8801 326 30 5.62 0.550 4.36 13.5 24240 14216 10024 371 40 4.78 0.550 4.36 11.5 27518 17376 10142 376 50 4.19 0.550 4.36 10.0 30145 20535 9610 356 60 3.75 0.550 4.36 9.0 32345 23694 8651 320 70 3.40 0.550 4.36 8.2 34243 26853 7390 274 80 3.12 0.550 4.36 7.5 35917 30012 5905 219 90 2.89 0.550 4.36 6.0 27440 22470 4047 4047	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Total Inflow - Duration (Min.) 10 15 20 30 40 50 60 70 80 90 MODIFIE 100-yr DA - "B Peak Dischar Duration (Min.) 20.0 Releas 10.5 Peak Dischar Duration (Min.) 15.0 Releas 10.5 Peak Dischar Duration <tr< td=""><td>D RATIO ge - Pre-Pro Intensity (In./Hr.) 5.62 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 6.42 Proposed C Intensity (In./Hr.) 7.55 6.42 5.62 4.54 3.85 3.36 3.00 2.71 2.48 2.29 D RATIO " ge - Pre-Pro Intensity (In./Hr.) 6.90 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 7.86 3.85 3.36 3.00 2.71 2.48 2.29 D RATIO " ge - Pre-Pro Intensity (In./Hr.) 6.90 Proposed C Intensity (In./Hr.) 7.86 9.00 Proposed C Intensity (In./Hr.) 7.86 9.00 Proposed C</td><td>NAL ME ie ct C 0.35 Routed flow Total Re Diect C 0.55 0.55 onditions C 0.550 0.550 0.550 0.5</td><td>HOD C A (Acres) 4.36 4.36 A (Acres) 4.36 A (Acres) 4.36 A (Acres) 4.36 A (Acres) 4.36 A (Acres) 4.36 A (Acres) 4.36 A (Acres) 4.36</td><td>Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 0 Q (cfs) 15.4 15.4 13.5 10.9 9.2 8.1 7.2 6.5 6.0 5.5 0 ETEN Q (cfs) 10.53 37.66 48.19 55.90 Q (cfs) 10.53 37.66 48.19 55.90</td><td>Imployee CFS CFS CFS CFS CFS CFS CFS Imployee Imployee <</td><td>LCULATI Requi Tin Outflow(cf) 6431 7717 9003 11575 14147 16720 19292 21864 24436 27009 LCULATI Requi Requi</td><td>ONS Ired Storage 0.11 0.12 0.12 0.13 0.13 0.14</td><td>Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft beak) 0 minutes 2 Storage(cy) 164 227 265 298 297 277 243 202 153 99 Volume 2 cu. Ft 6 cu. Yd. 3 ac-ft peak) 0 minutes 4 Storage(cy) 197</td></tr<>	D RATIO ge - Pre-Pro Intensity (In./Hr.) 5.62 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 6.42 Proposed C Intensity (In./Hr.) 7.55 6.42 5.62 4.54 3.85 3.36 3.00 2.71 2.48 2.29 D RATIO " ge - Pre-Pro Intensity (In./Hr.) 6.90 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 7.86 3.85 3.36 3.00 2.71 2.48 2.29 D RATIO " ge - Pre-Pro Intensity (In./Hr.) 6.90 Proposed C Intensity (In./Hr.) 7.86 9.00 Proposed C Intensity (In./Hr.) 7.86 9.00 Proposed C	NAL ME ie ct C 0.35 Routed flow Total Re Diect C 0.55 0.55 onditions C 0.550 0.550 0.550 0.5	HOD C A (Acres) 4.36 4.36 A (Acres) 4.36 A (Acres) 4.36 A (Acres) 4.36 A (Acres) 4.36 A (Acres) 4.36 A (Acres) 4.36 A (Acres) 4.36	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 0 Q (cfs) 15.4 15.4 13.5 10.9 9.2 8.1 7.2 6.5 6.0 5.5 0 ETEN Q (cfs) 10.53 37.66 48.19 55.90 Q (cfs) 10.53 37.66 48.19 55.90	Imployee CFS CFS CFS CFS CFS CFS CFS Imployee Imployee <	LCULATI Requi Tin Outflow(cf) 6431 7717 9003 11575 14147 16720 19292 21864 24436 27009 LCULATI Requi Requi	ONS Ired Storage 0.11 0.12 0.12 0.13 0.13 0.14	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft beak) 0 minutes 2 Storage(cy) 164 227 265 298 297 277 243 202 153 99 Volume 2 cu. Ft 6 cu. Yd. 3 ac-ft peak) 0 minutes 4 Storage(cy) 197
40 4.78 0.550 4.36 11.5 27518 17376 10142 376 50 4.19 0.550 4.36 10.0 30145 20535 9610 356 60 3.75 0.550 4.36 9.0 32345 23694 8651 320 70 3.40 0.550 4.36 8.2 34243 26853 7390 274 80 3.12 0.550 4.36 7.5 35917 30012 5905 219 90 2.89 0.550 4.36 6.0 27449 26470 4047 4047	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Fotal Inflow - Duration (Min.) 10 15 20 30 40 50 60 70 80 90 MODIFIE 100-yr DA - "B Peak Dischar Duration (Min.) 20.0 Releas 10.5 Peak Dischar Duration (Min.) 15.0 Coal Releas 10.5 0 1	D RATIO ge - Pre-Pro Intensity (In./Hr.) 5.62 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 6.42 Proposed C Intensity (In./Hr.) 7.55 6.42 5.62 4.54 3.85 3.36 3.00 2.71 2.48 2.29 D RATIO " ge - Pre-Pro Intensity (In./Hr.) 6.90 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 6.90 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 7.86 Proposed C Intensity (In./Hr.) 7.86 Proposed C	NAL ME ie ct C 0.35 Routed flow Total Re Diect C 0.55 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550 0.550	HOD C A (Acres) 4.36 COS-1 & A A (Acres) 4.36 A (Acres) 4.36 A (Acres) 4.36 A (Acres)	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 9.2 8.1 7.2 6.5 6.0 5.5 0ETEN Q (cfs) 10.53 37.66 48.19 55.90 Q (cfs) 10.53 37.66 48.19 55.90 Q (cfs) 10.53	Imployee CFS 22164 24186 25865 27305 28568 29694 TION CA CFS	LCULATI Requi	ONS ired Storage 0.11 ne to Peak(Tr 30 31 31 32 34 34 36 4433 6141 7166 8042 4433 6141 7166 8042 8017 7466 6573 5441 4131 2686 0NS 0NS 0NS 1014 37 0.2 ne to Peak(Tr 4433 6141 7166 8042 8017 7466 6573 5441 4131 2686 0NS 0NS 1014 37 0.2 1014 1014 37 0.2 1014 101	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft beak) 0 minutes 2 storage(cy) 164 227 265 298 297 277 243 202 153 99 Volume 2 cu. Ft 6 cu. Yd. 3 ac-ft peak) 0 minutes 4 Storage(cy) 197 277 243 202 153 99
50 4.19 0.550 4.36 10.0 30145 20535 9610 356 60 3.75 0.550 4.36 9.0 32345 23694 8651 320 70 3.40 0.550 4.36 8.2 34243 26853 7390 274 80 3.12 0.550 4.36 7.5 35917 30012 5905 219 90 2.89 0.550 4.36 6.0 27440 23470 4047 457	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Fotal Inflow - Duration (Min.) 10 15 20 30 40 50 60 70 80 90 MODIFIE 100-yr DA - "B Peak Dischar Duration (Min.) 20.0 Releas 10.5 Peak Dischar Duration (Min.) 15.0 Color 10 15 20 30 <td>D RATIO ge - Pre-Pro Intensity (In./Hr.) 5.62 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 6.42 Proposed C Intensity (In./Hr.) 7.55 6.42 5.62 4.54 3.85 3.36 3.00 2.71 2.48 2.29 D RATIO " ge - Pre-Pro Intensity (In./Hr.) 6.90 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 6.90 - Proposed C Intensity (In./Hr.) 7.86 - Proposed C Intensity (In./Hr.) 7.86 - Proposed C Intensity (In./Hr.) 7.86 - Proposed C Intensity (In./Hr.) 7.86 - Proposed C - Propose</td> <td>NAL ME iect C 0.35 Routed flow Total Re Diect C 0.55 0.55 onditions C 0.550 0.550</td> <td>HOD C A (Acres) 4.36 · <</td> <td>Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 Q (cfs) 15.4 9.2 8.1 7.2 6.5 6.0 5.5 0 ETEN Q (cfs) 10.53 37.66 48.19 55.90 Q (cfs) 10.53 37.66 48.19 55.90 Q (cfs) 10.53 37.66 48.19 55.90</td> <td>Imployee CFS CFS CFS CFS CFS CFS Imployee Imployee Imployee Imployee Imployee CFS CFS CFS Imployee Imployee Imployee Imployee Imployee Imployee Imployee CFS CFS</td> <td>LCULATI Requi Tin Outflow(cf) 6431 7717 9003 11575 14147 16720 19292 21864 24436 27009 LCULATI Requi Requi UTIN 14147 16720 19292 21864 24436 27009 LCULATI</td> <td>ONS ired Storage 0.11 ne to Peak(T) 30 31 31 32 32 34 32 34 34 36 44 33 6141 7166 8042 8017 7466 6573 5441 4131 2686 35441 4131 2686 0NS 0NS 0NS 1014 37 0.2 ne to Peak(T) 44 37 0.2 ne to Peak(T) 44 37 0.2 ne to Peak(T) 44 37 0.2 ne to Peak(T) 44 37 0.2 ne to Peak(T) 44 37 0.2 ne to Peak(T) 44 37 0.2 ne to Peak(T) 44 37 0.2 1014 37 1024 10</td> <td>Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft Deak) 0 minutes 4 5 5 5 5 5 5 5 5 5 5 5 5 5</td>	D RATIO ge - Pre-Pro Intensity (In./Hr.) 5.62 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 6.42 Proposed C Intensity (In./Hr.) 7.55 6.42 5.62 4.54 3.85 3.36 3.00 2.71 2.48 2.29 D RATIO " ge - Pre-Pro Intensity (In./Hr.) 6.90 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 6.90 - Proposed C Intensity (In./Hr.) 7.86 - Proposed C Intensity (In./Hr.) 7.86 - Proposed C Intensity (In./Hr.) 7.86 - Proposed C Intensity (In./Hr.) 7.86 - Proposed C - Propose	NAL ME iect C 0.35 Routed flow Total Re Diect C 0.55 0.55 onditions C 0.550 0.550	HOD C A (Acres) 4.36 · <	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 Q (cfs) 15.4 9.2 8.1 7.2 6.5 6.0 5.5 0 ETEN Q (cfs) 10.53 37.66 48.19 55.90 Q (cfs) 10.53 37.66 48.19 55.90 Q (cfs) 10.53 37.66 48.19 55.90	Imployee CFS CFS CFS CFS CFS CFS Imployee Imployee Imployee Imployee Imployee CFS CFS CFS Imployee Imployee Imployee Imployee Imployee Imployee Imployee CFS	LCULATI Requi Tin Outflow(cf) 6431 7717 9003 11575 14147 16720 19292 21864 24436 27009 LCULATI Requi Requi UTIN 14147 16720 19292 21864 24436 27009 LCULATI	ONS ired Storage 0.11 ne to Peak(T) 30 31 31 32 32 34 32 34 34 36 44 33 6141 7166 8042 8017 7466 6573 5441 4131 2686 35441 4131 2686 0NS 0NS 0NS 1014 37 0.2 ne to Peak(T) 44 37 0.2 ne to Peak(T) 44 37 0.2 ne to Peak(T) 44 37 0.2 ne to Peak(T) 44 37 0.2 ne to Peak(T) 44 37 0.2 ne to Peak(T) 44 37 0.2 ne to Peak(T) 44 37 0.2 1014 37 1024 10	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft Deak) 0 minutes 4 5 5 5 5 5 5 5 5 5 5 5 5 5
70 3.40 0.550 4.36 8.2 34243 26853 7390 274 80 3.12 0.550 4.36 7.5 35917 30012 5905 219 90 2.89 0.550 4.36 6.0 27440 22470 4047 457	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Total Inflow - Duration (Min.) 10 15 20 30 40 50 60 70 80 90 MODIFIE 10-yr DA - "B Peak Dischar Duration (Min.) 20.0 Releas 10.5 20 30 40 50 60 70 80 90 Peak Dischar	D RATIO ge - Pre-Pro Intensity (In./Hr.) 5.62 e Rate cfs ge - Post-Pro Intensity (In./Hr.) 6.42 Proposed C Intensity (In./Hr.) 7.55 6.42 5.62 4.54 3.85 3.36 3.00 2.71 2.48 2.29 D RATIO Intensity (In./Hr.) 6.90 2.71 2.48 2.29 D RATIO Intensity (In./Hr.) 6.90 2.71 2.48 2.29 D RATIO Proposed C Intensity (In./Hr.) 6.90 2.71 2.48 2.29 D RATIO Proposed C Intensity (In./Hr.) 6.90 2.71 2.48 2.29 D RATIO Proposed C Intensity (In./Hr.) 7.86 9.20 7.86 6.90 5.62 4.78	NAL ME ie ct C 0.35 Routed flow Total Re Diect C 0.55 0.55 onditions C 0.550 0.550	HOD C A (Acres) 4.36 4.36 A (Acres) 4.36 A (Acres) 4.36 A (Acres) 4.36 <	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 Q (cfs) 15.4 15.4 13.5 10.9 9.2 8.1 7.2 6.5 6.0 5.5 0 ETEN Q (cfs) 10.53 37.66 48.19 55.90 Q (cfs) 10.53 37.66 48.19 55.90 Q (cfs) 10.53 37.66 48.19 55.90	Imployee CFS CFS CFS CFS CFS CFS Imployee Imployee	LCULATI Requi	ONS Ine d Storage 0.11 0.12 0.13 0.13 0.14	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft beak) 0 minutes 2 cu. Ft 3 cu. Yd. 3 ac-ft 2 cu. Ft 4 227 265 298 297 277 243 202 153 99 Volume 2 cu. Ft 6 cu. Yd. 3 ac-ft peak) 0 minutes 4 2 2 cu. Ft 6 cu. Yd. 3 ac-ft 2 cu. Ft 7 277 3 26 3 ac-ft 7 277 3 26 3 7 1 3 7 6
80 3.12 0.550 4.36 7.5 35917 30012 5905 219 90 2.89 0.550 4.36 6.0 27440 22470 4047 457	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Total Inflow - Duration (Min.) 10 15 20 30 40 50 60 70 80 90 MODIFIE 100-yr DA - "B Peak Dischar Duration (Min.) 20.0 Releas 10.5 20.0 Releas 10.5 20.0 Releas 10.5 20.0 Releas 10.5 <td>D RATIO ge - Pre-Pro Intensity (In./Hr.) 5.62 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 6.42 Proposed C Intensity (In./Hr.) 7.55 6.42 5.62 4.54 3.85 3.36 3.00 2.71 2.48 2.29 D RATIO " ge - Pre-Pro Intensity (In./Hr.) 6.90 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 7.86 9.00 2.71 2.48 2.29 D RATIO " ge - Post-Pro Intensity (In./Hr.) 6.90 e Rate 5 cfs 9.00 1.00</td> <td>NAL ME ie ct C 0.35 Routed flow Total Re Diect C 0.55 0.55 onditions C 0.550 0.550</td> <td>HOD C A (Acres) 4.36 COS-1 & A A A (Acres) 4.36 A (Acres) 4.36 A (Acres) 4.36</td> <td>Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 Q (cfs) 15.4 9.2 8.1 7.2 6.5 6.0 5.5 0ETEN Q (cfs) 10.53 37.66 48.19 55.90 V Q (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 5.50 V C (cfs) 10.53 37.66 5.50 V C (cfs) 10.53 37.66 5.50 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.65 48.10 5.90 V C (cfs) 10.53 37.65 48.10 5.90 V C (cfs) 10.53 37.65 48.10 5.90 V C (cfs) 10.53 10.53 10.53 10.53 10.53</td> <td>Imployee CFS 22164 24186 25865 27305 28568 29694</td> <td>LCULATI Requi 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>ONS ired Storage 0.13 ine to Peak(T) 4433 6141 7166 8042 4433 6141 7166 8042 4433 6141 7166 8042 4433 6141 7166 8042 4433 6141 7466 6573 5441 4131 2686 ONS ONS ONS ired Storage 1014 37 0.2 ne to Peak(T) 4433 5441 4131 2686 0 0 1014 37 0.2 1014 37 1014 10 1014 1014 10 10 10 10 10 10 10 10 10 10</td> <td>Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft beak) 0 minutes 2 storage(cy) 164 227 265 298 297 277 243 202 153 99 Volume 2 cu. Ft 6 cu. Yd. 3 ac-ft peak) 0 minutes 4 Storage(cy) 197 277 243 202 153 99 Volume 2 cu. Ft 6 cu. Yd. 3 ac-ft peak) 0 minutes 153 99</td>	D RATIO ge - Pre-Pro Intensity (In./Hr.) 5.62 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 6.42 Proposed C Intensity (In./Hr.) 7.55 6.42 5.62 4.54 3.85 3.36 3.00 2.71 2.48 2.29 D RATIO " ge - Pre-Pro Intensity (In./Hr.) 6.90 e Rate 5 cfs ge - Post-Pro Intensity (In./Hr.) 7.86 9.00 2.71 2.48 2.29 D RATIO " ge - Post-Pro Intensity (In./Hr.) 6.90 e Rate 5 cfs 9.00 1.00	NAL ME ie ct C 0.35 Routed flow Total Re Diect C 0.55 0.55 onditions C 0.550 0.550	HOD C A (Acres) 4.36 COS-1 & A A A (Acres) 4.36 A (Acres) 4.36 A (Acres) 4.36	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 Q (cfs) 15.4 9.2 8.1 7.2 6.5 6.0 5.5 0ETEN Q (cfs) 10.53 37.66 48.19 55.90 V Q (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 5.50 V C (cfs) 10.53 37.66 5.50 V C (cfs) 10.53 37.66 5.50 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.66 48.19 55.90 V C (cfs) 10.53 37.65 48.10 5.90 V C (cfs) 10.53 37.65 48.10 5.90 V C (cfs) 10.53 37.65 48.10 5.90 V C (cfs) 10.53 10.53 10.53 10.53 10.53	Imployee CFS 22164 24186 25865 27305 28568 29694	LCULATI Requi 0 0 0 0 0 0 0 0 0 0 0 0 0	ONS ired Storage 0.13 ine to Peak(T) 4433 6141 7166 8042 4433 6141 7166 8042 4433 6141 7166 8042 4433 6141 7166 8042 4433 6141 7466 6573 5441 4131 2686 ONS ONS ONS ired Storage 1014 37 0.2 ne to Peak(T) 4433 5441 4131 2686 0 0 1014 37 0.2 1014 37 1014 10 1014 1014 10 10 10 10 10 10 10 10 10 10	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft beak) 0 minutes 2 storage(cy) 164 227 265 298 297 277 243 202 153 99 Volume 2 cu. Ft 6 cu. Yd. 3 ac-ft peak) 0 minutes 4 Storage(cy) 197 277 243 202 153 99 Volume 2 cu. Ft 6 cu. Yd. 3 ac-ft peak) 0 minutes 153 99
	MODIFIE 25-yr DA - "B" Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 20.0 Releas 8.0 Peak Dischar Duration (Min.) 15.0 Total Inflow - Duration (Min.) 10 15 20 30 40 50 60 70 80 90 MODIFIE 100-yr DA - "B Peak Dischar Duration (Min.) 20.0 Releas 10.5 20 30 40 50 60 70 80 90 Releas	D RATIO ge - Pre-Pro Intensity (In./Hr.) 5.62 Rate cfs ge - Post-Pro Intensity (In./Hr.) 6.42 Proposed C Intensity (In./Hr.) 7.55 6.42 5.62 4.54 3.85 3.36 3.00 2.71 2.48 2.29 D RATIO " ge - Pre-Pro Intensity (In./Hr.) 6.90 2.71 2.48 2.29 D RATIO " ge - Pres-Pro Intensity (In./Hr.) 6.90 2.71 2.48 2.29 D RATIO " ge - Pres-Pro Intensity (In./Hr.) 6.90 2.71 2.48 2.29 D RATIO " ge - Post-Pro Intensity (In./Hr.) 7.86 5.62 4.54 3.85 3.36 3.00 2.71 2.48 2.29 D RATIO " ge - Post-Pro Intensity (In./Hr.) 7.86 5.62 4.78 4.19 3.75 3.40	NAL ME ie ct C 0.35 Routed flow Total Re Diect C 0.55 0.55 onditions C 0.550 0.550	HOD C A (Acres) 4.36 (Acres) 4.36 A (Acres) 4.36 A (Acres) 4.36 A (Acres) 4.36	Q (cfs) 8.6 30.67 39.24 55.90 Q (cfs) 15.4 Q (cfs) 15.4 9.2 8.1 7.2 6.5 6.0 5.5 0 ETEN Q (cfs) 10.53 37.66 48.19 55.90 Q (cfs) 10.53 37.66 48.19 55.90 Q (cfs) 10.53 37.66 48.19 55.90 0 ETEN Q (cfs) 10.53 37.66 48.19 55.90	Inflow(cf) 10864 13858 16168 19617 22164 24186 25865 27305 28568 29694	LCULATI Requi	ONS ired Storage 0.11 ine to Peak(T) 4433 6141 7166 8042 4433 6141 7166 8042 8017 7466 6573 5441 4131 2686 ONS ONS ired Storage 1014 37 6573 5441 4131 2686 0 0 0 0 1014 37 0.2 1014 37 1024 10	Volume 2 cu. Ft 3 cu. Yd. 3 ac-ft Deak) D minutes 4 Storage(cy) 164 227 265 298 297 277 265 298 297 277 243 202 153 99 Volume 2 cu. Ft 6 cu. Yd. 3 ac-ft peak) 0 minutes 4 Storage(cy) 153 99 Volume 2 cu. Ft 6 cu. Yd. 3 ac-ft pac-ft pac-ft pac-ft pac-ft pac-ft 3 ac-ft p

VIER CALCULAT	IONS			- 1		
Q=((3.247*L*H^1.4	18-0.566*L^1.	9)/1+2L^1.87	7)*H^1.9			
= BOTTOM WID	TH OF WIER	IN FEET				
= HIEGHT OF U	PSTREAM W	ATER ABO	VE THE WI	ER CREST I	N FEET	
29.96 CFS						
= 3.0'						
=2.23'						
-YR WS= 601.45	+2.23= 603.6	68				

WIER CALCULA	TIONS				
Q=((3.247*L*H^1	.48-0.566*L^1.9	9)/1+2L^1.87	')*H^1.9		
L= BOTTOM WI	DTH OF WIER	IN FEET			
H= HIEGHT OF	UPSTREAM W	ATER ABO	VE THE WI	ER CREST	IN FEET
Q= 40.34 CFS					
L= 3.0'					
H=2.42'					
10-YR WS= 601	.45+2.42= 603.	.97			

WIER CALCULATIONS Q=((3.247*L*H^1.48-0.566*L^1.9)/1+2L^1.87)*H^1.9 L= BOTTOM WIDTH OF WIER IN FEET H= HIEGHT OF UPSTREAM WATER ABOVE THE WIER CREST IN FEET Q=49.65 CFS L= 3.0' H= 3.06' 100-YR WS= 601.45+3.06= 604.51

5-yr DA- "C					1			
Peak Dischar	ge - Pre-Proje	ct						
Duration	Intensity	~	A	Q				
(Min.)	(In./Hr.)	C	(Acres)	(cfs)				
15.0	4.91	0.35	4.75	8.2		Requir	ed Storage V	/olume
							5104	cu. Ft
Release	e Rate						189	cu. Yd.
8.2	2 cfs						0.12	ac-ft
						Tim	e to Peak(Tp	eak)
					1		30	minute
Peak Dischar	ge - Post-Proj	ect						
Duration	Intensity	~	A	Q				
(Min.)	(In./Hr.)	U.	(Acres)	(cfs)				
15.0	4.91	0.55	4.75	12.8				
Total Inflow -	Proposed Co	nditions						
Duration	Intensity		Α	Q				
(Min.)	(In./Hr.)	C	(Acres)	(cfs)	Inflow(cf)	Outflow(cf)	Storage(cf)	Storage(cy
10	5.82	0.550	4.75	15.2	9118	6128	2990	111
15	4.91	0.550	4.75	12.8	11556	7354	4202	156
20	4.28	0.550	4.75	11.2	13411	8579	4832	179
30	3.43	0.550	4.75	9.0	16135	11031	5104	189
40	2.89	0.550	4.75	7.5	18110	13482	4628	171
50	2.51	0.550	4.75	6.6	19655	15933	3722	138
60	2.22	0.550	4.75	5.8	20923	18384	2539	94
70	2.01	0.550	4.75	5.2	22000	20836	1164	43
80	1.83	0.550	4.75	4.8	22937	23287	-350	-13
90	1 68	0.550	4.75	4.4	23766	25738	-1972	-73

MODIFIED RATIONAL METHOD DETENTION CALCULATIONS

10-yr DA- "C"								
Peak Discharg	ge - Pre-Proje	ct						
Duration	Intensity	~	Α	Q				
(Min.)	(In./Hr.)	C	(Acres)	(cfs)				
15.0	5.54	0.35	4.75	9.2	1	Requir	ed Storage V	/olume
							5880	cu. Ft
Release	Rate		1				218	cu. Yd.
9.2	cfs						0.13	ac-ft
						Tim	e to Peak(Tp	eak)
							30	minutes
Peak Dischard	ge - Post-Proj	ect			1			
Duration	Intensity	-	Α	Q				
(Min.)	(In./Hr.)	C	(Acres)	(cfs)				
15.0	5.54	0.55	4.75	14.5				
Total Inflow	Prepared Co	nditiona						
Duration	Proposed Co	nations		•				
Duration	Intensity	С	A	Q (afr)	Inflow/of	Outflow	Otors as (af)	Otoma ma (au)
(<u>IVIIn.</u>)	(In./Hr.)	0.550	(Acres)	(CTS)	Innow(cr)		Storage(CI)	storage(cy)
10	6.54	0.550	4.75	17.1	10246	6908	3337	124
15	5.54	0.550	4.75	14.5	13027	8290	4/3/	1/5
20	4.84	0.550	4.75	12.6	15159	9672	5487	203
30	3.89	0.550	4.75	10.2	18315	12435	5880	218
40	3.29	0.550	4.75	8.6	20625	15198	5426	201
50	2.86	0.550	4.75	7.5	22445	17962	4484	166
60	2.55	0.550	4.75	6.7	23949	20725	3224	119
70	2.30	0.550	4.75	6.0	25232	23488	1743	65
80	2.10	0.550	4.75	5.5	26352	26252	100	4
90	1.94	0.550	4.75	5.1	27348	29015	-1667	-62

MODIFIED RATIONAL METHOD DETENTION CALCULATIONS

25-yr DA- "C"								
Peak Dischar	ge - Pre-Proje	ect						
Duration	Intensity	~	Α	Q				
(Min.)	(In./Hr.)	C	(Acres)	(cfs)				
15.0	6.42	0.35	4.75	10.7	1	Requi	red Storage V	/olume
							6962	cu. Ft
Releas	e Rate						258	cu. Yd.
10.7	cfs						0.16	ac-ft
						Tim	e to Peak(Tp	eak)
							30	minutes
Peak Dischar	ge - Post-Proj	ect			1			
Duration	Intensity	~	A	Q	1			
(Min.)	(In./Hr.)	c	(Acres)	(cfs)				
15.0	6.42	0.55	4.75	16.8				
Total Inflow -	Proposed Co	nditions						
Duration	Intensity	~	A	Q				
(Min.)	(In./Hr.)	C	(Acres)	(cfs)	Inflow(cf)	Outflow(cf)	Storage(cf)	Storage(cy)
10	7.55	0.550	4.75	19.7	11837	8007	3830	142
15	6.42	0.550	4.75	16.8	15099	9609	5491	203
20	5.62	0.550	4.75	14.7	17617	11210	6407	237
30	4.55	0.550	4.75	11.9	21374	14413	6962	258
40	3.85	0.550	4.75	10.1	24150	17616	6534	242
50	3.36	0.550	4.75	8.8	26353	20819	5534	205
60	3.00	0.550	4.75	7.8	28183	24021	4161	154
70	2.71	0.550	4.75	7.1	29751	27224	2527	94
80	2.48	0.550	4.75	6.5	31127	30427	700	26

90	2.29	0.550	4.75	6.0	32355	33630	-1275	-47
MODIFIE	D RATION	IAL ME	THOD D	ETEN	TION CA		DNS	
100-yr DA- "C"								
Peak Discharg	ge - Pre-Proje	ect						
Duration	Intensity	c	Α	Q				
(Min.)	(In./Hr.)		(Acres)	(cfs)				
15.0	7.86	0.35	4.75	13.1		Requir	ed Storage V	/olume
							8776	cu. Ft
Release	Rate						325	cu. Yd.
13.1	cfs						0.20	ac-ft
						Tim	e to Peak(Tp	eak)
							30	minutes
Peak Discharg	e - Post-Proj	ect						
Duration	Intensity	_	A	Q		1		
(Min.)	(In./Hr.)	C	(Acres)	(cfs)				
15.0	7.86	0.55	4.75	20.5				
Total Inflow -	Proposed Co	nditions						
Duration	Intensity		A	Q				
(Min.)	(In./Hr.)	C	(Acres)	(cfs)	Inflow(cf)	Outflow(cf)	Storage(cf)	Storage(cv)
10	9.20	0.550	4.75	24.0	14414	9795	4618	171
15	7.86	0.550	4.75	20.5	18471	11755	6717	249
20	6.90	0.550	4.75	18.0	21634	13714	7920	293
30	5.62	0.550	4.75	14.7	26408	17632	8776	325
40	4.78	0.550	4.75	12.5	29979	21550	8429	312
50	4.19	0.550	4.75	10.9	32841	25468	7373	273
60	3.75	0.550	4.75	9.8	35238	29386	5851	217
70	3.40	0.550	4.75	8.9	37306	33304	4001	148
		0.550	4 75	0.0	20120	27002	1007	71
80	3.12	0.550	4.75	8.2	39130	31223	1907	/1

WIER CALCULATIONS Q=((3.247*L*H^1.48-0.566*L^1.9)/1+2L^1.87)*H^1.9 L= BOTTOM WIDTH OF WIER IN FEET H= HIEGHT OF UPSTREAM WATER ABOVE THE WIER CREST IN FEET Q= 10.7 CFS L= 1.5' (18") H= 1.78' 25-YR WS= 602.84+1.78= 604.62

WIER CALCULATION Q=((3.247*L*H^1.48-0 L= BOTTOM WIDTH H= HIEGHT OF UPS Q= 13.13 CFS L= 1.5' (18") H= 2.04' 100-YR WS= 602.84-

WIER CALCULA	IONS		
Q=((3.247*L*H^1.	48-0.566*L^1.9)/1+2L	.^1.87)*H^1.9	
L= BOTTOM WID	TH OF WIER IN FEE	T	
H= HEGHT OF U	PSTREAM WATER	ABOVE THE WIEF	R CREST IN FEET
Q= 8.20 CFS			
L= 1.5' (18")			
H=1.49'			
	4 40 000 00		

WIER CALCULA	TIONS	
Q=((3.247*L*H^1.	.48-0.566*L^1.9)/1+2L^1.87)*H^1.9	
L= BOTTOM WIE	OTH OF WIER IN FEET	
H= HIEGHT OF L	JPSTREAM WATER ABOVE THE WIEF	R CREST IN FEET
Q= 9.20 CFS		
Q= 9.20 CFS L= 1.5' (18")		
Q= 9.20 CFS L= 1.5' (18") H= 1.61'		

	######################################
RECORD DRAWING Malage Date: December 08, 2021 This record drawing herein reflects to the best of the design engineer's knowledge the approximate location of the constructed work using information provided by the contractor(s).	8 LUCAS ESTATES, LLC 5997 CORAL RIDGE COURT FRISCO, TEXAS 75034
	Brian L. Umberger 82474

TEXAS DEVELOPMENT SERVICES 4888 Pecan Place Drive

McKinney, TX 75071 972-427-4100 TX FIRM NO. 12790

TDS PROJECT NO. 18009

12

87)*H^1.9		
OVE THE V	VIER CREST	IN FEET
	87)*H^1.9 OVE THE V	87)*H^1.9 OVE THE WIER CREST











C:\Users\Brian\Dropbox\TDS\18009-PS-Lucas\DWG\18009-Details.dwg PLOT DATE/TIME: 12/8/2021 - 8:39pm



PAVING DETAILS	NEW CASTLE ESTATES peter James Grayum Survey, ABST. 354 city of LUCAS, COLLIN COUNTY, TEXAS
	8 LUCAS ESTATES, LLC 5997 CORAL RIDGE COURT FRISCO, TEXAS 75034
Revisions: 1.	ember 08, 2021
TEXAS I 48 TDS	DEVELOPMENT SERVICES 88 Pecan Place Drive McKinney, TX 75071 972-427-4100 TX FIRM NO. 12790 PROJECT NO. 18009 17

