TAYLOR COUNTY BOARD OF COUNTY COMMISSIONERS

PERRY, FLORIDA

TUESDAY, MARCH 28, 2023

6:00 P.M.

201 E. GREEN STREET

TAYLOR COUNTY ADMINISTRATIVE COMPLEX

OLD POST OFFICE

THE CHAIR CALLED THE WORKSHOP MEETING TO ORDER AT 6:05 P.M. THE MEMBERS OF THE BOARD ATTENDED THE MEETING AS FOLLOWS:

DISTRICT	OFFICE	NAME	HOW ATTENDED	PORTION ATTENDED
1	CHAIR	JAMIE ENGLISH	IN PERSON	ALL
2		JIM MOODY	IN PERSON	ALL
3	V-CHAIR	MICHAEL NEWMAN	IN PERSON	ALL
4		PAM FEAGLE	IN PERSON	ALL
5		THOMAS DEMPS	IN PERSON	ALL

A FULL BOARD BEING PRESENT.

COUNTY STAFF ATTENDED THE MEETING AS FOLLOWS:

POSITION	NAME	HOW ATTENDED	PORTION ATTENDED
CO ADMINISTRATOR	LAWANDA PEMBERTON	IN PERSON	ALL
ASST. CO ADMIN.	MARSHA DURDEN	IN PERSON	ALL
COUNTY ATTORNEY	CONRAD BISHOP	IN PERSON	ALL
CO FIRE CHIEF	DAN CASSEL	IN PERSON	ALL
CO ENGINEER	KENNETH DUDLEY	IN PERSON	ALL

COUNTY CONSTITUTIONAL OFFICERS ATTENDED THE MEETING AS FOLLOWS:

POSITION	NAME	HOW ATTENDED	PORTION ATTENDED
CLERK OF COURT	GARY KNOWLES	IN PERSON	PARTIAL
DEP CLERK OF COURT	SALINA GRUBBS	IN PERSON	ALL

OTHER PARTIES PRESENT:

FDOT PROJECT DEVELOPMENT MANAGER, MICHAEL BROCK
FDOT NOISE SPECIALIST/PROJECT MANAGER, JARED SWEAT

COMMISSIONER DEMPS LED THE BOARD IN PRAYER, FOLLOWED BY THE PLEDGE OF ALLEGIANCE TO THE FLAG. BUSINESS WAS TRANSACTED AS FOLLOWS:

THE CHAIRMAN READ INSTRUCTIONS FOR CONFERENCE CALL-IN LINE.

MOVE ITEM NO 4 TO ITEM NO 3

4. THE BOARD TO CONTINUE DISCUSSION REGARDING GRANGER BRIDGE.

WORKSHOP ITEMS:

3. **THE BOARD TO DISCUSS THE ARMY CORPS OF ENGINEERS FLOOD PLAIN MANAGEMENT STUDY FOR STEINHATCHEE.**

DISCUSSION:

COUNTY ENGINEER- WE HAVE REACHED OUT TO ARMY CORPS AND ASKED FOR THEIR ASSISTANCE THROUGH THE FLOOD PLAIN MANAGEMENT STUDY, TO LOOK AT STEINHATCHEE AS A WHOLE TO SEE IF THERE WERE SOME OBVIOUS ISSUES DOWN THERE THAT WAS BECOMING MORE OF A REPETITIVE ISSUE IN CERTAIN AREAS IN STEINHACHEE. THE GOAL IS TO REDUCE RISK ASSOCIATED WITH FLOODS, EVALUATE AND COMPARE REASONABLE, COST-EFFECTIVE, LONG-TERM SOLUTIONS.

WE LOOKED AT 2 AREAS, 1ST AVENUE AND 13TH CENTRAL AVENUE, AND CAME UP WITH SIXTEEN ALTERNATIVES WITH AN ESTIMATED COST FOR EACH ALTERNATIVE. THE COSTS DOES NOT INCLUDE DESIGN, REAL ESTATE OR PERMITTING COSTS.

WE LOOKED AT STRUCTURAL AND NON-STRUCTURAL MEASURES. NON-STRUCTURAL IS KIND OF LIKE 13TH AND CENTRAL AVENUE. THERE'S QUITE A FEW HOMES AROUND THAT RIM OF THAT BASIN THAT WE COULD BUY OUT AND RELOCATE. THAT'S A NON-STRUCTURAL METHOD. BUT THEN YOU ALSO LOOK AT STRUCTURAL METHODS AS, CAN WE EXPAND THIS CULVERT? CAN WE PUT A CULVERT IN HERE? CAN WE DIG A SWALE THAT CONNECTS THIS DRAINAGE PATH TO THIS DRAINAGE PATH? ALL OF THOSE, THAT FULL MATRIX OF POSSIBILITIES WAS CONSIDERED.

ALTERNATIVE 12 AND 13 WAS DEEMED TO BE THE MOST EFFECTIVE. YOU ARE DOING MORE OF THINGS AND FINALLY GETTING TO A POINT THAT'S PRODUCTIVE. THEIR COST ESTIMATE IS A $2.7 MILLION FOR ALTERNATE 12, AND $5.6 MILLION FOR ALTERNATE 13.

ALTERNATIVE 12, WHICH ADDRESSES ALMOST ALL OF STEINCHATCHEE, IS A PASSIVE. MEANING, YOU'RE NOT HAVING TO ACTIVELY DO SOMETHING. EXAMPLE, WHEN WE GET A FLOODING, WE DISPATCH PUBLIC WORKS WITH A PUMPER AND THEY SIT DOWN THERE AND THEY PUMP. THAT'S AN ACTIVE EFFORT.

ALTERNATIVE 13 IS AN ACTIVE EFFORT. IT'S AN ACTUAL, PHYSICAL LIFT STATION AND A PUMP THAT WOULD DISCHARGE WATER FROM THIS POINT TO STEINHATCHEE RIVER. THAT'S WHY YOU ARE SEEING A GREAT COST. WHAT YOU ARE GOING TO EXPECT IS THAT ACTIVE MEASURES HAVE A GREATER LONG-TERM LIFE CYCLE COST BECAUSE THEY HAVE MAINTENANCE AND UPKEEP AS WELL.

MY PREFERENCE IS A PASSIVE. A CULVERT THAT IS SLOPED. AS THE WATER RISES, IT PASSIVELY ENTERS INTO THE CULVERT AND DISCHARGES WITHOUT ANCHOR. PUBLIC WORKS CREW IS NOT HAVING TO GO DOWN THERE AND DO ANYTHING. THAT'S THE BEST PERFORMING ALTERNATIVE.

YOU DO NOT HAVE TO DO ALL OF THE COMPONENTS AT ONE TIME. YOU CAN DO THEM INDIVIDUALLY KNOWING THAT ALL OF THOSE COLLECTIVELY WILL GET TO THE SAME POINT.

COMMISSIONER DEMPS- MAY NEED TO CONTACT THE COMMUNITY TO SEE WHAT THEY SAY ABOUT IT.

COMMISSIONER NEWMAN- WE CAN CERTAINLY HAVE A PUBLIC HEARING.

COUNTY ADMINISTRATOR- WE HAVE $4.2 MILLION IN ARPA FUNDS THAT COULD BE SPENT ON THIS PROJECT. THERE IS A TIMELINE TO USE THOSE FUNDS.

BOARD IN FAVOR OF OPTION ALTERNATIVE 12

4. THE BOARD TO CONTINUE DISCUSSION REGARDING GRANGER BRIDGE.

DISCUSSION:

COUNTY ENGINEER- SHOWED A SLIDE PRESENTATION TO THE BOARD OF THE NEW BRIDGE CONSTRUCTION CONCEPT.

THIS IS A TIMBER BRIDGE THAT WAS CLOSED BACK IN 2019. THIS BRIDGE IS STRUCTURALLY DEFICIENT, WHICH THEN PROMPTED IT TO BECOME ELIGIBLE AS A CANDIDATE FOR FEDERAL BRIDGE REPLACEMENT PROGRAM. DOT HAS CHOSEN THE MECHANISM OF A LOCAL AGENCY PROJECT. WE ARE THE ONES WHO ARE BRINGING THIS BRIDGE PROJECT TO COMPLETION USING FEDERAL FUNDS. SINCE THAT HAS INITIATED, THERE HAS BEEN ONE TELECONFERENCE, PUBLIC MEETING, A LIVE PUBLIC MEETING AT THE STEINHATCHEE COMMUNITY CENTER, AND THEN ANOTHER DISCUSSION HERE TODAY.

WE ARE HERE TO GIVE YOU A DISPLAY. THERE WERE MANY COMMENTS THAT STEMMED ON THE CONCERN OF THE OVERALL SIZE OR THE NATURE OF WHAT WAS BEING PROPOSED RELATIVE TO WHAT IS THERE CURRENTLY TODAY. THE BRIDGE DISPLAY IS A RENDERING THAT WAS PUT TOGETHER AND THE WAY IT LOOKS TODAY WITH THE WOODEN STRUCTURALLY EFFICIENT BRIDGE.

WE ARE DISCUSSING AND WORKING WITH ADJACENT LANDOWNER FOR THESE IMPACTS TO MOVE ONTO HIS PROPERTY. THAT IS PART OF THE RIGHT-A-WAY ACQUISITION COMPONENT OF IT. THIS IS A VERY NARROW ROAD COMING THROUGH HERE. WE WANTED TO AT LEAST TRY TO MINIMIZE THE OVERALL IMPACT OF WHAT WE WERE GOING TO REPLACE AND WENT WITH A SINGLE END CONFIGURATION BUT, REALIZING THAT YOU HAVE OPPOSING DIRECTIONS OF TRAFFIC. YOU WILL SEE THAT YOU HAVE A SEPARATION OF LANES, A YIELD POINT, WHICH ALLOWS THE ONCOMING TRAFFIC TO TRAVERSE THE BRIDGE, AND THEN ONCE THAT PATH IS CLEARED, THEN THAT VEHICLE CAN MAKE ITS WAY ACROSS THE BRIDGE. THAT IS DONE ON BOTH SIDES. THIS SEEMS TO FIT VERY WELL IN THERE. DEFINITELY GIVES IT A MUCH CLEANER LOOK. FROM THE WAY THIS IS TODAY AND ALSO OFFERS THE LONGEVITY OF A BRIDGE WHICH WE AREN'T FORTUNATE TO HAVE AT THIS POINT WITH A TIMBER BRIDGE.

THIS IS WHERE WE ARE AT IN THE DESIGN PHASE. WE HAVE GONE BACK AND FORTH FOR SOME TIME TRYING TO ACHIEVE THE OBJECTIVES THAT WAS VOICED DURING THE 2019 DISCUSSIONS WHEN THE BRIDGE WAS ORIGINALLY CLOSED. WE TRIED TO PUT ALL OF THOSE CONCERNS TOGETHER, AND PROVIDE SOMETHING THAT WE FELT WAS GOING TO FIT WITHIN THAT COMMUNITY. WE PITCHED THAT PROPOSAL TO THE PUBLIC AND THAT WAS THE SOURCE OF THE DISCUSSIONS AT THE TELECONFERENCE, THE LIVE PUBLIC MEETINGS, AND WHAT WE ARE CONTINUING HERE TODAY.

WE ARE AT THE POINT THAT WE ARE SUGGESTING CONTINUING FORWARD WITH THIS PROCESS TO REPLACE THIS BRIDGE AND THE CONCEPT THAT YOU HAVE TODAY.

COMMISSIONER NEWMAN- IS THERE ANY CONCEPTS AS WHAT THOSE COSTS ARE GOING TO BE IN PROPOSING THE ADDITIONAL FOOTAGE THAT THIS WOULD REQUIRE? I THINK THE PROPOSED COST IS AT $3 MILLION DOLLARS.

COUNTY ENGINEER- YOU'RE TALKING ABOUT A FULL PROJECT COST AND NOT NECESSARILY CONSTRUCTION COMPONENT OR RIGHT-A-WAY. THAT'S THE SUM OF THE COMPONENTS. THE RIGHT-A-WAY ACQUISITION COST IS THE THIRD LINE DOWN OF THE BROCHURES THAT WE PRESENTED TO YOU LAST TIME. THIS DOES NOT INCLUDE DESIGN AND PERMITS. IT IS INCLUSIVE OF ANY MITIGATION, CREDIT PURCHASES AND COST REQUIREMENTS.

COMMISSIONER NEWMAN- WHAT IS THE COST OF THE WETLANDS IMPACTS AND THE MITIGATION REQUIREMENTS?

COUNTY ENGINEER- YOU ARE SPEAKING SPECIFICALLY TO THE ACQUISITION OF MITIGATION CREDITS. THERE WILL BE PARTIAL CREDITS THAT WILL BE ACQUIRED FOR THIS PROJECT.

WE ARE ANTICIPATING A GENERAL PERMIT THROUGH THE WATER MANAGEMENT DISTRICT WHICH WOULD NOT REQUIRE CREDITS. WE ARE ANTICIPATING, AT THE MOST, A TENTH AND IF IT'S UNDER, WE WON'T GET ANY CREDITS FOR THIS.

COMMISSIONER NEWMAN- THE REASON FOR MY QUESTION, IS LATELY, WE MAY HAVE ASSUMED THAT THERE WAS GOING TO BE A MINOR IMPACT OR COST, BUT IT WAS NOT SUCH. NOW THIS WAS IN A PAVEMENT PROJECT. IT'S NOT THE 1ST AVE PROJECT.

COUNTY ENGINEER- THERE'S SOME DIFFERENT METHODOLOGY THAT OR IDEOLOGIES THAT ARE GOING AROUND AT THE DEP LEVEL. SOME OF THAT IS DEP IS TAKING OVER SOME OF THE ARMY CORPS RESPONSIBILITIES. AT A TENTH OF AN ACRE, IT REALLY DEPENDS ON THE QUALITY OF WHAT YOU'RE AFFECTING VERSUS PRISTINE. WHICH THEN, COULD DECREASE HOW MUCH OF A CREDIT THAT YOU REQUIRE. THE WORST-CASE SCENARIO WOULD BE FOUR-HUNDRED THOUSAND OR SO FOR A FULL CREDIT. BUT, YOU ARE NOT GOING TO SEE THAT TYPE OF IMPACT AT ALL TO THAT LEVEL FOR THIS. EVEN THOUGH, THE 1ST AVENUE, REMEMBER THAT WAS A TOTAL OF .46 MITIGATION CREDITS, AND I WANT TO SAY .26 OF THAT MAYBE WAS SALTWATER. THE TOTAL OF SALT AND FRESH WAS ABOUT 48,000, I BELIEVE.

COMMISSIONER NEWMAN- I WOULD ALSO SAY THAT PROJECT HAD SIMILAR ASSUMPTIONS IN RESPECT TO NOT BUDGETING FOR THE POTENTIAL PURCHASE. THAT'S WHY I'M WANTING TO UNDERSTAND THAT HERE.

COUNTY ENGINEER- THERE ARE EXEMPTIONS AND EXCLUSIONS FOR LINEAR TRANSPORTATION PROJECTS THAT WE TRY TO MAXIMIZE. WE OBVIOUSLY PUSH THE DEFINITION OF WHAT IS EXEMPTIBLE. THE NUMBER HE THREW OUT WAS A THRESHOLD THAT'S WRITTEN INTO THAT RULE. OBVIOUSLY, WE WILL HAVE TO IDENTIFY THE LIMIT OF DISTURBANCE. QUANTIFY THAT OVERALL SURFACE AREA, AND THEN THAT'S WHAT GOES INTO YOUR NEW MAN CALCULATIONS TO SAY WHETHER YOU CAN OR CAN'T. WE WILL TRY TO MINIMIZE WHAT HAS TO BE MITIGATED. LIMITING THE OVERALL ENVIRONMENTAL IMPACT THAT WE HAVE IS THE PRIMARY OBJECTIVE OF THE BRIDGE PROJECT.

COMMISSIONER NEWMAN- IT LOOKS LIKE THERE IS GOING TO BE SOME DISPLACEMENT TO THE EXISTING DRIVEWAY.

COUNTY ENGINEER- YES, BECAUSE OF TRANSITIONS AND QUEUES, YOU WOULD WANT TO AT LEAST LEAVE ENOUGH ROOM FOR A TRAILER VEHICLE TO BE IN QUEUE, OUTSIDE OF THAT DRIVEWAY ENTRANCE. THEN, YOU WILL BE ABLE TO TRANSITION DOWN TO THE ADJACENT PROPERTY. FURTHER DOWN, IS LESS OF A TRANSITION JUST BECAUSE THE SLOPE IS COMING DOWN. WE WILL HAVE TO WORK ON ENSURING THAT THE RADIUS THROUGH THERE IS ADEQUATE FOR THAT ADJACENT LANDOWNER TO MAKE SURE HE'S NOT SEEING THAT AS AN OBSTRUCTION TO HIS POINT OF ACCESS INTO THE ROADWAY.

COMMISSIONER NEWMAN- IN THE SCOPE OF THIS PROPOSED PROJECT, WOULD THERE BE LESS IMPACTS OR POTENTIAL IMPACTS BE LESS, IF IT WASN'T A PROJECT OF THIS MAGNITUDE? NOT A CAST IN PLACE, CONCRETE BRIDGE TO THIS SCOPE OF PAVEMENT AND THE AMENITIES THAT ARE NOT THERE TODAY.

COUNTY ENGINEER- I DON'T KNOW HOW TO GO TO ANY LESSER EXTENT THAN A SINGLE LANE BRIDGE WITH MINIMUM SHOULDERS AND VERTICAL SIDES. TO SAY, THERE IS SOMETHING LESS SURFACE THAN WHAT'S THERE TODAY. THE APPROACHES AND TRANSITIONS ARE ALL AS TIGHT AS YOU CAN GET THEM BASED ON DESIGN STANDARDS. THEY WEREN'T MAXIMIZED, WHICH WOULD BE MUCH SOFTER AND GENTLER BECAUSE YOU HAVE PROPERTIES ON BOTH SIDES AND LIMITED WIDTH OF ACCESS.

I WENT DOWN THERE WITH THE SURVEYORS. WE WENT THROUGH TRYING TO DELINEATE MAINTAINED AREAS, RELATIVE TO RIGHTS-OF-WAY, AS WELL AS INFRASTRUCTURES SUCH AS FENCING, TO MAKE SURE THAT WE WERE TRYING TO PIECE IT AS LESS INTRUSIVE AS POSSIBLE TO MAKE IT FIT THROUGH THERE.

COMMISSIONER NEWMAN- SO, TODAY THIS IS A PEDESTRIAN BRIDGE, WHICH IS NOT ALLOWED FOR VEHICULAR TRAFFIC. A BRIDGE WITH LESSER CAPACITY WHICH WOULD BE A LESSER SCOPE AND WOULD ALSO BE EQUIVALENT TO WHAT'S IN PLACE TODAY. IT'S A PEDESTRIAN BRIDGE. NO VEHICLE TRAFFIC OF ANY KIND ALLOWED.

COUNTY ENGINEER-IT MAY BE A PEDESTRIAN BRIDGE BECAUSE OF STRUCTURAL CAPACITY, BUT IT IS A VEHICLE BRIDE RELATIVE TO ITS WIDTH.

COMMISSIONER NEWMAN- BUT, IF WE MAINTAIN THE WIDTH AND IT DOESN'T HAVE THE STRUCTURAL FORTITUDE, THEN IT CAN BE A PEDESTRIAN BRIDGE STILL AT THE SAME WIDTH.

COUNTY ENGINEER- YOU ARE NOT GOING TO GET THIS FUNDING TO PUT IN A PEDESTRIAN BRIDGE.

COMMISSIONER NEWMAN- IS THERE A POTENTIAL TO SEEK OUT OTHER OPTIONS FOR FUNDING?

COUNTY ENGINEER- SURE, YOU CAN ALWAYS USE LOCAL FUNDS TO REPLACE IT WITH A PEDESTRIAN BRIDGE. BUT, YOU ARE NOT GOING TO GET A PROJECT THAT IS GOING TO CONSIDER REPLACING AN EXISTING VEHICULAR BRIDGE THAT'S STRUCTURALLY DEFICIENT USING THIS TYPE OF FUNDING AND PUT SOMETHING LESS THAN A STRUCTURALLY ADEQUATE VEHICULAR BRIDGE.

COMMISSIONER NEWMAN- WHAT WOULD THE TIME PLAN BE AND UNDERSTANDING THE AVAILABILITY OF THOSE OPTIONS?

COUNTY ENGINEER- ASIDE FROM US HAVING WAITED NEARLY SIX YEARS. IF WE WERE TO TRY TO DO IT UNDER SCOP PROGRAM, IT'S FIVE YEARS. I'M NOT SURE THEY WOULD DO IT SOLELY AS A PEDESTRIAN BRIDGE, THAT DOESN'T HAVE ANCILLARY ROADWAY COMPONENTS TO IT. EVERYTHING WE PUT ON OUR PRIORITY IS A FIVE-YEAR LOOK AHEAD.

COMMISSIONER NEWMAN- CAN THE BRIDGE THAT'S THERE, IN THE CONDITION THAT IT IS IN, LAST FOR AN ADDITIONAL 5 YEARS AS A PEDESTRIAN BRIDGE?

COUNTY ENGINEER-WHAT WE KNOW IS THE CONDITION OF THE BRIDGE THE LAST TIME IT WAS INSPECTED. WHAT WE DON'T KNOW IS THE CONDITION OF THAT BRIDGE TODAY. OBVIOUSLY, IF IT HAD DECAY AT THAT POINT AND IT WAS A PROGRESSIVE DECAY, THAT DECAY WILL CONTINUE TO SOME EXTENT. WHETHER IT'S LINEAR, TRAP OR EXPONENTIAL, I HAVE NO IDEA. WILL DOT SUBSEQUENTLY GO DOWN THERE AND INSPECT A CLOSED BRIDGE? THEY'RE NOT SUPPOSED TO. ONCE IT'S CLOSED, IT'S OURS.

SO, WHAT YOU ARE SUGGESTING IS ALLOWING THE BRIDGE TO REMAIN OPEN AND THE LIABILITY TO REMAIN WITH YOU.

COMMISSIONER NEWMAN- YOU STILL HAVE THE CONTINUED LIABILITY, EVEN IF THEY ARE CLOSED. YOU COULD STILL BE NAMED AS A POTENTIAL IN A LIGATION.

COUNTY ATTORNEY-YOU COULD, BUT THAT DOESN'T MEAN YOU WILL LOSE. PLUS, THE FACT THAT THERE'S A LOT OF TALK IN THE LEGISLATURE ABOUT CHANGING THE RESPONSIBILITY LAW IN FLORIDA TO 50/50, BUT IT'S CONSTANTLY CHANGING. IT COULD BE LESS OUR FAULT IN AN INSTANCE OF AN INCIDENT.

COUNTY ENGINEER- WE HAVE DONE OUR DILIGENCE IN MEANS TO PRECLUDE THAT NON-PEDESTRIAN ACCESS.

COMMISSIONER NEWMAN- IT WOULD APPEAR THAT, WHAT WE ARE LOOKING AT VARIES IN MULTITUDES OF RESPECTS OTHER THAN THE PROPOSAL AT THIS POINT, BEING JUST THAT, AND NOT ANY FURTHER. I SUPPOSE IN RESPECT TO ACQUISITIONS OR THINGS OF THAT NATURE, NONE OF THOSE PROCESSES HAVE STARTED?

MICHAEL BROCK, FDOT PROJECT DEVELOPMENT MANAGER- THE PROCESS HAS STARTED BUT NOT TO THE POINT MORE OFFERS HAVE BEEN MADE. I WILL KNOW A POTENTIAL AMOUNT WHEN IT GETS FURTHER IN DESIGN AND WE GET THE TRUE FOOTAGE. WE HAVE AN ESTIMATE BASED UPON THE CONCEPT. THE CONCEPT IS NOT BASED ON FULL DESIGN YET. WHEN DESIGN REALLY GETS UNDERWAY AND REALLY STARTS NARROWING DOWN WIDTHS, LENGTHS AND CURVES, THAT'S WHEN THE TRUE RADICAL PROCESS WILL BEGIN.

COUNTY ADMINISTRATOR READ LETTERS TO THE BOARD FROM MEMBERS OF THE STEINHATCHEE COMMUNITY.

CHAIRMAN ENGLISH ANNOUNCED THE INSTRUCTIONS FOR CALL-INS FROM THE PUBLIC.

CALLER 0220- MS. GRANGER FROM HIGHLANDS, NORTH CAROLINA, PROPERTY OWNER IN GRANGER SUBDIVISION- ALL FOR REMOVING AND/OR RAISING THE BRIDGE. ANYTHING THAT WOULD GIVE US MORE ACCESS TO THE WATER.

CHAIRMAN ENGLISH PROCEEDED WITH IN PERSON SPEAKERS FROM THE COMMUNITY.

CHUCK BERGER: PENNSULA DR, LOT 12 AND 13, STEINHATCHEE- DOT HAS A GREAT PLAN FOR A MODERN, UPDATED BRIDGE. A NEW BRIDGE WILL REQUIRE LITTLE TO NO MAINTENANCE FOR MANY YEARS. IT WILL PROVIDE A RELIABLE AND DEPENDABLE ROUTE FOR EMERGENCY EVACUATION, FIRE ESCAPE AND ACCESS FOR 911. A LOT OF HOMEOWNER DOES NOT WISH TO SEE THIS TURNED INTO A HOA. WE AGREE TO THE UPGRADES TO THE BRIDGE WHICH WILL CREATE A BENEFIT FOR THE FUTURE.

ART GILBREATH-309 PENNSULA DR, STEINHATCHEE- COUNTY HAS 3 OPTIONS. CHEAPEST OPTION WOULD BE TO REMOVE THE BRIDGE WHICH WILL LESSEN THE CRIME. 2- IF YOU PUT IN A NEW BRIDGE, IT ALLOWS EMERGENCY VEHICLES ACCESS. 3-IF THERE IS NO CHANGE IN THE BRIDGE, IT WOULD BE A LIABILITY. THERE ARE SEVERAL THAT IS FOR THIS NEW BRIDGE.

JIM SUBER, STEINHATCHEE- IF THE NEW BRIDGE IS CONSTRUCTED, THE CANAL WILL BE DREDGE FOR LARGER BOATS WHICH MEANS ACCESS TO THE WATER.

BRENDA BERGER-PENNSULA DR, LOT 13, STEINHATCHEE-WE WOULD LIKE TO HAVE THE BRIDGE AND ACCESS TO THE WATERWAY.

GAIL DICKERT-NOT OPPOSED TO HAVING A BRIDGE, BUT OPPOSED TO DESTROYING THE WILDERNESS. IT SHOULD BE PRESERVED.

COMMISSIONER FEAGLE-THREE YEARS AGO THE COMMUNITY CAME PLEADING TO REPLACE THE BRIDGE. THE BOARD SPENT CONSIDERABLE ENGERY, TIME AND MONEY TO MAKE IT HAPPEN AND AWARDED $3 MILLION DOLLARS TO REPLACE THEIR BRIDGE. NOW SOME ARE COMING AND SAYING THEY DON'T WANT THE BRIDGE AS DESIGNED. THREE YEARS AGO, WHEN THEY CAME TO US, WE HEARD A LOT ABOUT SAFETY, EVACUATION, EMERGENCY SERVICES BUT NOW, I'M NOT HEARING THAT FROM THESE PEOPLE THAT CAME THREE YEARS AGO WANTING THE BRIDGE. INSTEAD, WE'RE HEARING ABOUT THE ENVIRONMENT AND MANATEES. I'M TALKING WITH ONE PERSON THAT LIVES DOWN THERE AND HE HAS BEEN THERE 20 YEARS AND HAS NEVER SEEN THE FIRST MANATEE.

SO, THEY DON'T WANT THE BRIDGE AS DESIGNED, TORN DOWN OR LEFT THAT WAY BUT THEY WANT AN ADORABLE LITTLE WOODEN BRIDGE THAT THEY CAN WALK OVER. I TALKED TO QUITE A FEW PEOPLE AND WE'VE HEARD FROM QUITE A FEW PEOPLE TONIGHT, AND PEOPLE THAT CALLED IN THAT HAVE PROPERTY OR LIVE IN THAT AREA, AND THEY DON'T WANT AN HOA OR AN LLC. THEY DON'T WANT A CUTE LITTLE WOODEN BRIDGE. WHAT THEY DO WANT AND HAVE SAID TONIGHT, IS THEY WANT US TO BUILD A BRIDGE AS DESIGNED CURRENTLY OR TEAR IT DOWN AND DON'T REPLACE IT. THE MAJORITY OF THE PEOPLE, THAT IS WHAT THEY SAID.

I WENT DOWN MYSELF YESTERDAY, TO TAKE A LOOK AT THE BRIDGE. IT'S BEEN MENTIONED PEOPLE LIKE TO WALK ACROSS THE BRIDGE. WELL, I'VE LOOKED AT

WALKING ACROSS IT YESTERDAY AND I DIDN'T FEEL REAL COMFORTABLE WALKING ACROSS IT.

IT'S ALSO BEEN MENTIONED THAT THEY WANT TO GET THEIR BOATS IN AND OUT. IT'S IMPORTANT TO THEM. IF THE BRIDGE IS TORN DOWN, PEOPLE CAN STILL WALK, BUT IF YOU PUT IN A CUTE LITTLE WOODEN BRIDGE, THE BOAT OWNERS WOULDN'T BE HAPPY. WE EITHER NEED TO TEAR IT DOWN AND NOT REPLACE IT, OR REPLACE IT WITH THE NEW DESIGNED BRIDGE.

COUNTY ENGINEER- THE BRIDGE WILL HAVE A 6-FOOT CLEARANCE AT HIGH TIDE.

COMMISSIONER NEWMAN- THIS PROPOSED PROJECT COULD REACH A HIGHER COST THAN THE PROPOSAL. THIS IS A PROPOSED COST OF $3 MILLION DOLLARS. FIRST AVENUE IS THE PROPOSED COST IT IS, BUT WE UNDERSTAND THAT WE WOULD BE SAFE IN MAKING AN ASSUMPTION THAT BOTH OF THOSE COSTS IS MORE LIKELY TO BE HIGHER THAT WHAT'S PROPOSED. I WOULD LIKE TO SEE A BETTER SOLUTION THAT IS MORE SUITABLE TO THIS RESIDENTIAL NEIGHBORHOOD THAT DOESN'T HAVE THIS MAGNITUDE OF COST AND EXPENSE BUT PERHAPS IS JUST AS EFFICIENT OR EFFECTIVE IN RESPECT TO ITS LOCATION.

COUNTY ENGINEER-I WOULD HOPE THAT IT WOULD BE UNDERSTOOD THAT TAYLOR COUNTY HAS THE POLITICAL SUBDIVISION OF THE STATE OF FLORIDA IN THIS LOCATION. WE HAVE A RESPONSIBILITY FOR PROVIDING A SAFE INFRASTRUCTURE FOR THE GENERAL PUBLIC'S USAGE. THIS IS A BENEFIT THAT WE HAVE WITH FEDERAL BRIDGE REPLACEMENT PROGRAMS. IT'S DONE THAT WAY BECAUSE THEY ARE UNDERSTANDING THAT SOME OF OUR LOCAL JURISDICTIONS DON'T HAVE THE FUNDING SOURCE OR THE CAPITA TO SUPPORT THE COST ASSOCIATED WITH THIS TYPE OF INFRASTRUCTURES. THESE PROGRAMS ARE SET UP TO WHERE IT PROVIDES OPPORTUNITIES FOR US TO HAVE THESE COMPONENTS OF OUR INFRASTRUCTURE REPLACED USING AND RELYING ON A LARGER FUNDING SOURCE, THAT BEING FEDERAL DOLLARS. LOOKING AT THIS COMMUNITY TODAY IS NOT WHAT THAT COMMUNITY WILL LOOK LIKE TOMORROW. DON'T LOOK AT IT AS A WASTE, WHEN WE ASKED FOR IT.

COMMISSIONER MOODY- TAKE THE BRIDGE OUT AND PUT UP A DEAD-END SIGN.

COMMISSIONER DEMPS- MY CONCERNS IF A HURRICANE CAME INTO STEINHATCHEE WITH EVACUATIONS. HAVING A BRIDGE WOULD BE A PLUS. I DO KNOW THAT THINGS WON'T STAY THE SAME AND IF A BRIDGE IS BUILT, THEN WE CAN CONTINUE THE PROGRESS. STEINHATCHEE IS GROWING AND WE NEED TO LOOK AT THE PEOPLE THERE AND THE PEOPLE COMING IN THE FUTURE. AS FAR AS CRIME, THAT'S WHAT THE SHERIFF IS FOR. ARE WE THINKING ABOUT NOW OR TOMORROW?

CHAIRMAN- IT'S SHAMEFUL IF WE DON'T DO IT IF WE ASKED THEM TO PUT IN THE WORK TO DO IT, OR, DO WE TAKE THE BRIDGE OUT? WITH ALL THESE PEOPLE WITH BOATS AND WANTING TO PASS THROUGH, I CAN UNDERSTAND THEM WANTING THE BRIDGE. IT'S A TOUGH DECISION, BUT I CAN UNDERSTAND BOTH SIDES.

COUNTY ADMINISTRATOR- THE BOARD HAS ALREADY VOTED TO APPROVE THE NEW BRIDGE IN 2021 AND WE HAVE AN AGREEMENT WITH FDOT. ANY ISSUES WITH TAKING OUT THE BRIDGE AND CLOSING THE ROAD WITH TWO DEAD-END ROADS?

COUNTY ENGINEER-OUR CODE OF ORDINANCES HAS REQUIREMENT THAT WHEN YOU HAVE A ROADWAY THAT HAS MORE THAN FOUR RESIDENCE, YOU ARE SUPPOSED TO HAVE SOME MEANS OF A TURNAROUND. IF WE WERE TO CREATE DEAD-END ROADS, PEOPLE WON'T ALWAYS ADHERE TO THE SIGNAGE.

5. THE BOARD TO DISCUSS REQUESTS FOR PURCHASE OF COUNTY PROPERTY.

DISCUSSION:

COUNTY ADMINISTRATOR- I HAVE HAD SEVERAL CALLS FROM INDIVIDUALS AND REALTORS WANTING TO KNOW WHAT OUR PROCESS IS IF THEY ARE INTERESTED IN PURCHASING COUNTY PROPERTIES. HOW DO YOU WANT TO HANDLE THESE CALLS? I WOULD LIKE TO HAVE TIME TO PREPARE AN INVENTORY OF COUNTY PROPERTY AND TO DETERMINE HOW WE CAN COME INTO COMPLIANCE WITH STATE STATUE THAT DIRECTS US TO HAVE THIS TYPE OF INVENTORY LIST, AND WHICH PROPERTIES THAT MAY BE USED FOR AFFORDABLE HOUSING.

COMMISSIONER FEAGLE-I'M NOT INTERESTED IN GOING INTO THE REAL ESTATE BUSINESS. I DON'T THINK WE NEED TO ADVERTISE PROPERTIES FOR SALE, BUT CONTINUE TO OFFER IT FIRST TO THE PROPERTY OWNERS ADJACENT OF LAND THAT THE COUNTY HAS NO USE FOR. I WOULD BE VERY CAUTIONS OF LETTING GO OF VERY MUCH COUNTY PROPERTY.

CHAIRMAN- I WOULD BE INTERESTED IN KNOWING WHAT PROPERTIES THE COUNTY OWNS.

COMMISSIONER NEWMAN- IT'S A GREAT ASSET TO HAVE THE PROPERTIES WE HAVE. I WOULD BE IN FAVOR OF UNDERSTANDING WHAT THIS LIST IS.

COUNTY ADMINISTRATOR-I CAN PREPARE AN INVENTORY OF PROPERTIES OWNED BY TAYLOR COUNTY.

COUNTY ATTORNEY- IF WE RECEIVE CALLS, REFER THEM TO FLORIDA STATUTE 125.35 AND 125.37.

6. **THE BOARD TO DISCUSS TRASH COLLECTION ON COUNTY ROADS.**

DISCUSSION:

COMMISSIONER NEWMAN-WE HAVE A NUMBER OF ROADS WITH HIGHER VOLUME OF TRASH. I'M TRYING TO UNDERSTAND IF THERE IS A POTENTIAL JUSTIFICATION AND MORE EFFORTS IN TRYING TO PICK UP THIS TRASH AND UNDERSTAND THE POTENTIAL COSTS. I AM INTERESTED IN REDUCING THE AMOUNT OF TRASH ON THE ROAD.

COMMISSIONER MOODY- IN MY DISTRICT, IF THERE IS A BAG OF GARBAGE ON THE SIDE OF THE ROAD, YOU CAN CALL THE SHERIFF AND HE WILL CONTACT THE OWNER OF THE GARBAGE IF THEY CAN FIND AN ADDRESS.

COMMISSIONER FEAGLE-MAYBE AT THE NEXT WORKSHOP WE CAN DISCUSS ABOUT DOING A COMMUNITY CLEAN-UP LIKE THE OTHER COUNTIES DO. WE CAN INVITE THE CHAMBER AND THE SHERIFF TO THE WORKSHOP.

COMMISSIONER NEWMAN AND CHAIRMAN-WOULD LIKE TO UNDERSTAND A COST OF EXTRA CLEAN-UP PER MILE.

DISCUSS AT THE NEXT WORKSHOP.

7. **THE BOARD TO DISCUSS THE DRAFT AMENDED SALARY SCHEDULE.**

DISCUSSION:

COUNTY ADMINISTRATOR- SINCE 2014 THE MINIMUM SALARIES HAVE BEEN CHANGED UPON DIRECTION OF THE BOARD SEVERAL TIMES. THERE WAS NEVER ANY TYPE OF DOCUMENT WHERE THE MIDPOINT AND THE MAXIMUM COULD BE AMENDED BASED UPON THE MINIMUM SALARIES. SO, RATHER THAN CONTRACT WITH SOMEONE TO CREATE THIS, I JUST CREATED IT MYSELF. IT'S SOMETHING I CAN BRING TO THE BOARD DURING EVERY BUDGET CYCLE. WHEN CHANGES ARE MADE TO THE STARTING SALARIES OF THESE POSITIONS WE CAN JUST ASK YOU TO APPROVE IT AS PART OF THE BUDGET. I JUST WANT TO MAKE SURE YOU UNDERSTOOD WHAT I HAD CREATED. I THINK IT MAKES IT MUCH EASIER IN THE FUTURE AS MINIMUM SALARIES OR STARTING SALARIES ARE CHANGED.

IF YOU ARE IN AN AGREEMENT, THEN WE CAN MOVE FORWARD WITH THIS TYPE OF DOCUMENT AND WE CAN INCLUDE IT AS PART OF THE BUDGET APPROVAL.

BOARD IN AGREEMENT TO INCLUDE.

8. **THE BOARD TO DISCUSS THE VOLUNTEER FIREFIGHTER PROGRAM.**

DISCUSSION:

COMMISSIONER FEAGLE- WE NEED TO MOVE FORWARD WITH SETTING UP THESE CLASSES AND PROGRAM. WE HAVE PREVIOUSLY DISCUSSED SOME OF THESE THINGS ABOUT THE PROGRAM AND HAVE ALL AGREED THAT WE WILL NEED A COORDINATOR TO COORDINATE THESE CLASSES. THEN ITS JUST A MATTER OF ARE THEY GOING TO BE FULL-TIME OR PART-TIME. I KIND OF HAD IT IN MY MIND THAT THEY WOULD BE PART-TIME AND THEN THE COMPENSATION THAT WE'RE GOING TO GIVE THEM. THE FIRST THING WE TALKED ABOUT WAS GIVING THEM $20 AN HOUR. COUNTY ADMINISTRATOR, LAWANDA HAS BEEN WORKING ON A JOB DESCRIPTION AND LOOKING AT THE PAY RANGES. THE ONES THAT FINISH THE PROGRAM AND GET CERTIFIED, WE TALKED ABOUT GIVING THEM $500 AND $250 FOR THEIR RECERTIFICATION. FOR OUR CURRENT FIREFIGHTERS, WE HAD TALKED ABOUT GIVING THEM SOME KIND OF COMPENSATION LIKE $25 PER CALL.

COMMISSIONER NEWMAN- MY UNDERSTANDING IT WAS CONTINGENT UPON THE AWARDING OF THE SAFER GRANT.

COMMISSIONER FEAGLE- NO, WE TALKED ABOUT IF WE GOT IT THAT WOULD BE GOOD BUT, WE ALSO DISCUSSED MOVING ON WITHOUT IT.

COMMISSIONER NEWMAN- I'M NOT IN AGREEMENT. I THOUGHT WE DISCUSSED THE OPTIONS OF SEEKING A SAFER GRANT THAT WOULD REACH OUT TO FULL-TIME PERSONNEL OR OTHER OPTIONS THAT WOULD REACH OUT TO RECRUITMENT. WHICH COULD BE IN A VOLUNTEER BASIS WHICH COULD INCLUDE VOLUNTEER COORDINATOR. MY EXPECTATION WHEN WE PROCEEDED TO SEEK THAT GRANT FUNDING, AND UNDERSTANDING THAT WE STILL HAD THE OPTION IN THE FUTURE, REGARDLESS OF THE AWARDING OF THIS CONSIDERATION THAT BE IN THE VOLUNTEER COORDINATOR, THAT WE'RE STILL ELIGIBLE FOR SEEKING A FULL-TIME POSITION IN ANOTHER FUNDING CYCLE.

SO, IT WAS MY EXPECTATION THAT IF WE WERE AWARDED THE SAFER GRANT, AND SHOULD WE BE SUCCESSFUL, THEN WE COULD IMPLEMENT HIRING A COORDINATOR AND LOOKING INTO THESE POSSIBILITIES FOR INCENTIVIZING VOLUNTEER SERVICES.

COMMISSIONER FEAGLE- WE HAVE ALREADY APPLIED FOR THAT GRANT. IN THE MEANTIME, WE CAN GO AHEAD AND SET THE PROGRAM UP AS IT'S GOING TO HAPPEN. IT MAY NOT HAPPEN. BUT, WE CAN GO AHEAD AND DO ALL THE FOOTWORK AND WE CAN SET IT UP. HOPEFULLY, THE FUNDING WILL COME ALONG. IF WE DON'T GET THE GRANT, THEN WE CAN WORK IT INTO OUR BUDGET. I THINK WE ALL AGREE THAT OUR FIREFIGHTERS SAVED US A LOT OF MONEY EVERY YEAR. THE ONLY WAY WE'RE TO GET THEM, IS TO SET UP A NEW REVISED PROGRAM WHERE THERE IS SOME COMPENSATION AND WHERE YOU GOT SOMEBODY THAT IS DIRECTLY RESPONSIBLE FOR THAT PROGRAM THAT CAN MARKET THE PROGRAM AND MAKE IT WORK.

FIRE CHIEF- WE SHOULD KNOW ABOUT THE GRANT NO LATER THAN JUNE. THEY DON'T DO THE ENTIRE AWARD ALL AT ONE TIME. THEY WILL SEND OUT SO MANY IN A WEEK. THE LAST GRANT WE UTILIZED, IT TOOK SEVERAL WEEKS BEFORE WE GOT NOTIFICATION. IT COULD RANGE IN A TIME PERIOD BUT AS EARLY AS PROBABLY JUNE.

COMMISSIONER FEAGLE- IF WE WENT AHEAD AND BUDGETED THIS AND THEN WE GOT THE GRANT, COULD WE REIMBURSE OURSELVES WITH THE GRANT?

FIRE CHIEF- YOU CANNOT HIRE SOMEONE BEFORE THE AWARD OF THE GRANT.

COMMISSIONER MOODY- WE DO NEED TO GET IT STARTED FOR SURE. IF YOU GET SOMEONE CERTIFIED, IS THERE GOING TO BE SOMETHING SAYING THAT THEY ARE REQUIRED TO STAY IN PERRY TO WORK?

COMMISSIONER FEAGLE- IF YOU ARE GOING TO GIVE THEM $500 FOR GETTING CERTIFIED, YOU COULD PUT SOMETHING IN THERE THAT IF THEY DIDN'T THEY WILL PAY YOU BACK. WHAT WE DON'T WANT TO DO IS TRAIN SOMEONE FREE OF CHARGE TO THEM, BECAUSE THE HOSPITAL HAS ALREADY SAID THEY WOULD PAY FOR THE PHYSICAL, THEN LEAVE AND GO TO ANOTHER COUNTY.

COMMISSIONER DEMPS- CAN YOU BE A PAID FIREFIGHTER AND A VOLUNTEER FIREFIGHTER IN THE SAME COUNTY?

FIRE CHIEF- YOU CANNOT BE A PAID FIREFIGHTER AND GET PAID AS A VOLUNTEER FIREFIGHTER IN THE SAME COUNTY. BUT CAN BE A VOLUNTEER IN A DIFFERENT COUNTY. THE VOLUNTEER SERVICE THAT WE ARE GOING TO PROVIDE IS A LEVEL ONE CERTIFICATE, WHICH IS ONLY FOR VOLUNTEERING. YOU CAN'T GO WORK AS A FULL-TIME FIREFIGHTER WITH A LEVEL ONE.

COMMISSIONER FEAGLE- THE VOLUNTEERS ARE NOT GETTING THE CALL OUTS. HOW DO WE TONE THEM OUT?

COUNTY ADMINISTRATOR- COUNTY DOES NOT TONE OUT VOLUNTEERS. UNFORTUNATELY, THAT IS SOMETHING THAT IS HAPPENING WHEN THEY'RE DISPATCHED.

FIRE CHIEF- THE CALLS GO THROUGH OUR 911 DISPATCH WHICH GOES THROUGH TWO DIFFERENT FREQUENCIES. ONE IS THE EIGHT HUNDRED MEGAHERTZ WITH THE SOLAR SYSTEM WHICH IS THE SLURS SYSTEMS. THIS IS WHAT OUR RADIOS OPERATE ON, OR, OUR PAGERS AND THEY ARE OPERATED ON A VHF SYSTEM. THEY HAVE TO SIMULCAST BOTH OF THOSE FREQUENCIES AT THE SAME TIME WHEN THEY SEND OUT THE ALERT TONE.

VOLUNTEER FIREFIGHTER STEVE- THE VHF DOESN'T WORK AT ALL BEING WE ARE SO FAR OUT IN DIFFERENT PARTS OF THE COUNTY. THE PAGER THE VOLUNTEERS USE DOES NOT GET THE SIGNAL THAT IS SENT OUT. YOU CAN HEAR THE BEEP, BUT NOT THE INFORMATION OF WHERE THE FIRE IS, IT'S JUST STATIC. THEY HAVE APPS FOR YOUR TELEPHONES WHICH WOULD WORK BETTER AND WOULD BE LESS EXPENSIVE.

WE CURRENTLY HAVE 5 PEOPLE THAT ARE INTERESTED IN THE PROGRAM. I WOULD LIKE TO SEE AFTER TRAINING, THE FIREFIGHTERS GET NEW GEAR. WE CURRENTLY HAVE HAND-DOWNS WITH HOLES AND ARE UNSAFE.

FIRE CHIEF- WE GO THROUGH THE EQUIPMENT ONCE A YEAR AND GET RID OF THE EQUIPMENT THAT IS TEN YEARS OLD, WHICH IS THE EXPIRATION.

COMMISSIONER NEWMAN- WE NEED TO LOOK AT NOT ONLY OUR VOLUNTEERS BUT WE ALSO NEED TO BE CONCERNED WITH RECRUITING FULL-TIME FIREFIGHTERS, ESPECIALLY IF THE SAFER GRANT DOES NOT GO THROUGH.

CHAIRMAN- DO WE WANT TO PUT THIS INTO OUR BUDGET SESSIONS?

COMMISSIONER FEAGLE- YES.

COMMISSIONERS AGREE TO GET STARTED ON PUTTING THE PROGRAM TOGETHER AND WAIT ON HIRING UNTIL THE SAFER GRANT IS AWARDED. DIRECT THE STAFF TO COME BACK WITH NUMBERS, DRAFT JOB DESCRIPTION AND POLICY.

THE HOUR BEING APPROXIMATELY 9:24 P.M., AND THERE BEING NO FURTHER BUSINESS, THE WORKSHOP WAS ADJOURNED.

BOARD OF COUNTY COMMISSIONERS

TAYLOR COUNTY, FLORIDA

BY: _____

JAMIE ENGLISH, Chair

ATTEST:

BY: _____

SALINA GRUBBS, D.C. for

GARY KNOWLES, Clerk

3

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, JACKSONVILLE DISTRICT
701 SAN MARCO BOULEVARD
JACKSONVILLE, FLORIDA 32207-8715

SAJ-PM-W

25 January 2023

MEMORANDUM FOR Taylor County (Steinhatchee), County Administrator, Lawanda Pemberton, 201 East Green Street, Perry, Florida 32347

SUBJECT: Taylor County (Steinhatchee) Floodplain Management Services Report

1. The subject project has been completed and is being officially transmitted to Taylor County.

2. Enclosed with this memo is the Final Report detailing the Best Performing Alternative.

3. If you have any questions concerning the subject project please contact Mr. Jim Suggs, Small Projects Program Manager at 904-412-3465.

SUGGS.JAMES.LUCINE.1232229701

Digitally signed by SUGGS.JAMES.LUCINE.1232229701
Date: 2023.01.24 16:22:07 -05'00'

Encls

JAMES L. SUGGS
Small Project
Program Manager

REPORT FOR TAYLOR COUNTY-STEINHATCHEE FLOODPLAIN MANAGEMENT SERVICES (FPMS)

TAYLOR COUNTY, FLORIDA

January 2023

Prepared by:

U.S. Army Corps of Engineers, Jacksonville District

US Army Corps of Engineers
Jacksonville District

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1 INTRODUCTION

1.1 STUDY PURPOSE

This Flood Plain Management Services (FPMS) study was conducted at the request of Taylor County Pursuant to Section 206 of the Flood Control Act of 1960, as amended. Taylor County requested technical assistance from the U.S. Army Corps of Engineers (USACE) to address flooding issues due to tidal surges and heavy rainfall in a letter dated November 1st, 2019. The following study is not associated with a federal action to implement the findings of this analysis. Any participation from USACE with implementation would require a Department of the Army Decision Document under a study authority as well as the associated National Environmental Policy Act (NEPA) documentation. The Non-Federal Sponsor (NFS), Taylor County, will be responsible for implementing and obtaining all required permits to design and construct the project.

1.2 STUDY GOAL

The desired outcome of the Taylor County–Steinhatchee FPMS is to determine source(s) of flooding effects and gather flood impact data to evaluate structural and non-structural solutions to:

- Reduce risk associated with floods
- Evaluate and compare reasonable cost-effective long-term solutions

Two separate project areas of Taylor County-Steinhatchee are affected by heavy rainfall flooding: the community of Steinhatchee and the City of Perry. Early in the study the NFS requested the project delivery team (PDT) focus on the Steinhatchee project area to complete a grant proposal currently underway by the NFS. This watershed system seated community is located north of and empties into the Steinhatchee River **(Figure 1-1).** The following report focuses solely on the Steinhatchee community and the NFS's request of analysis of the challenges associated with FPMS The conceptual-level analysis performed supports the development of alternatives to mitigate flood risk to residences and businesses produced by flooding due to heavy rain events in all defined areas of concern of the Taylor County-Steinhatchee community.

Figure 1-1: Aerial view of Taylor County-Steinhatchee Project location north of the Steinhatchee River.

2 PLAN FORMULATION

2.1 PLAN FORMULATION PROCESS

The areas of greatest concern for the community of Steinhatchee are the east and west project areas depicted in **Error! Reference source not found.** Structural and non-structural management measures were identified for alternatives formulation and subsequent hydrologic and hydraulic modeling and examination. The engineering analysis entailed multiple disciplines and was an iterative process that evolved as part of alternatives development. Discussion of the engineering analysis is difficult to separate from the alternative development process, and the entire integrated analysis process is covered in the Engineering Appendix. A majority of the technical analysis was performed using the Hydrologic Engineering Center River Analysis System (HEC-RAS) model provided by Federal Emergency Management Agency (FEMA). HEC-RAS is a hydraulic model and was used to analyze the impacts of each management measure and alternative on flood stages within the project area. The detailed components, such as culverts, pump stations, earthwork, and costs, were analyzed and designed by Civil, Geotechnical, Structural, Mechanical, Electrical, and Cost Engineers. These plans were then evaluated and compared based on several factors such as environmental impacts and maintenance requirements. Afterwards, two alternatives with differing storm water moving solutions were selected as the best performing alternatives and further refined to support the development of cost estimates as well as real estate and permitting requirements. Further details informing this alternative optimizing process can be found within the Engineering Appendix (Appendix A).

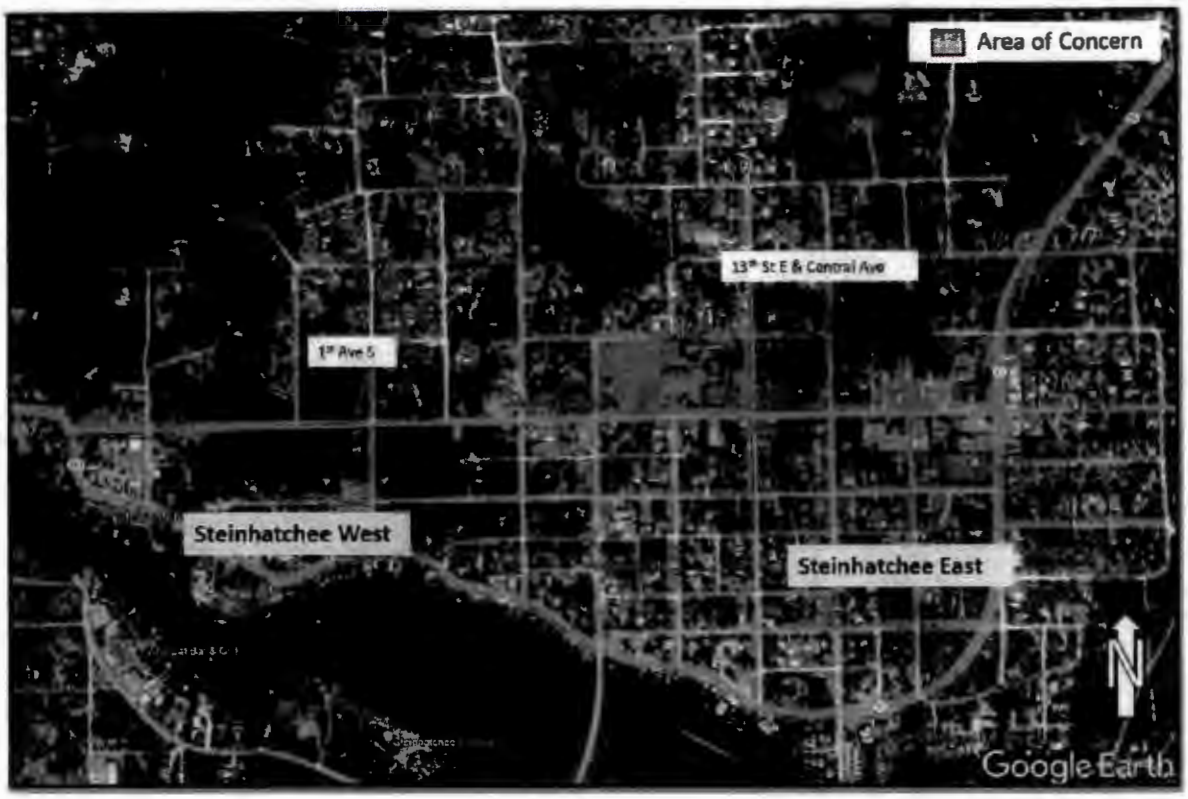

Figure 2-1: Project Area Features.

2.2 PROBLEMS, OPPORTUNITIES, OBJECTIVES AND CONSTRAINTS

Problems, opportunities, objectives and constraints are categorizing tools for the planning process that allow the team to focus on the essential components of the concern identified by the NFS. The mechanisms of the project have specific items to classify into each of the four options. The definitions are as follows: Problems are existing undesirable conditions while opportunities are future desirable conditions. Objectives are statements that describe desired results by solving the problem and taking advantage of the opportunities identified. Constraints are a very important element as they alert the team to the limit the extent of the planning process and are designed to avoid undesirable changes between the future without and the with-project conditions. The identification of problems, opportunities, objectives, and constraints assists the formulation of feasible alternatives to mitigate the risk of flooding in the study area that can be implemented by Taylor County once funding is available and permits have been acquired.

2.2.1 PROBLEMS

A site visit conducted July 13th, 2021 identified flooding concerns in both the east and west project areas in Taylor County-Steinhatchee (Error! Reference source not found.). Significant flooding and recurring damage to surrounding residences, businesses, and drainage issues due to heavy rains and low elevation are the primary problems within Taylor County–Steinhatchee. The hydrologic inputs along the contributing watershed boundary are detailed in the Engineering Appendix (Appendix A). Further analysis

of the problems by the HEC-RAS modeling and engineering analysis led the team to the determination of alternatives based on these contributing issues.

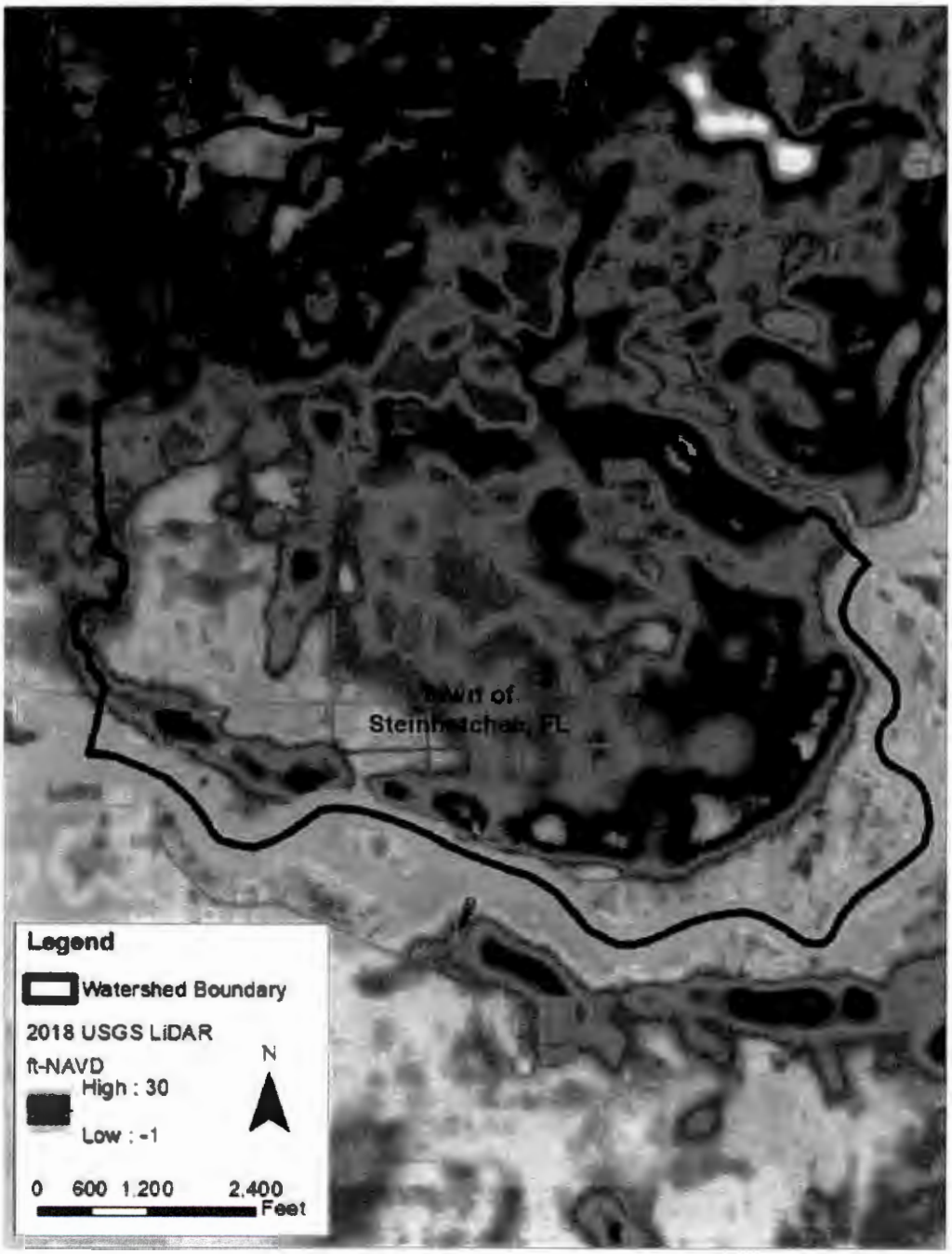

Figure 2-2: Steinhatchee Watershed Boundary and 2018 USGS LiDAR.

2.2.2 OPPORTUNITIES

Improved drainage in the Taylor County project areas provides the opportunity to lessen the severity and alleviate flooding events and duration of these types of events. This is furthered detailed and modeled in the Engineering Appendix (Appendix A).

2.2.3 OBJECTIVES

The objective of the study is to reduce flooding of residences, businesses, and increase internal drainage within the Taylor County-Steinhatchee project area for the 2% (50-year Recurrence Interval), 24-hr Annual Event Probability (AEP) storm. A 2% AEP Storm Event, or 50-year storm event is a term used to describe the size of the flood occurrence. It is a means of describing how likely a flood is to occur in a given year (i.e. A 2% AEP means 2% chance in any given year or 1 in every 50 years). The 2% AEP was the primary event analyzed by the engineering team for the alternative design as a request from the NFS and was used as a metric for effectiveness of the alternatives.

2.2.4 CONSTRAINTS

The project must not negatively impact environmental and cultural resources in the study area. These constraints are further detailed in Section 5 (Environmental Permitting) and Section 6 (Cultural Resources Compliance). The project must also avoid adverse impacts to surrounding residential and commercial structures.

2.3 MANAGEMENT MEASURES

Management measures are defined as individual structural (S) or non-structural (NS) actions that would take place at geographical locations within the project area to alleviate the defined problems and take advantage of opportunities in ways contributing to the objectives and not violate study constraints. A management measure is a feature (a structural element that requires construction or assembly on-site) or an activity (a non-structural action) that can stand alone or be combined with other management measures to form alternative plans. A detailed matrix of management measures and alternatives documented during the plan formulation process is included as attachment 1.

Table 2-1: Structural and non-structural modeled measures.

Type of Measure	Modeled Measures
Non-Structural	Buyouts (relocating private property)
	Flood-proofing (wet, dry, and combination of both)
	Relocations (utilities and roads)
	Raise first floor elevations
Structural	Culvert expansion
	Culvert construction
	Channel widening
	Culvert invert drop
	Pump construction
	Snagging of culverts and channels

Type of Measure	Modeled Measures
	Clearing of culverts and channels
	Raise 13th Street East and Central Avenue
	Regrade County owned right-of-way at 13th Street East and Central Avenue

Non-structural measures are a significant consideration for possible flood risk management measures. Each have their own value and various ways in which they can be implemented.

The Engineering team modeled each of the management measures to determine the ability to provide flooding relief as either a potential standalone measure or more effective combined. Snagging and clearing were assumed in the modeling and within all alternatives due to the assumption of typical and regular maintenance and full capability of the structures in the area. Removing obstructions caused by debris and vegetation is considered an early step in mitigating the problems in the area to allow for full utilization of the current infrastructure. The analyzed results showed all independent management measures are effective at providing flooding relief through the metric of water surface elevation (WSE).

2.4 ALTERNATIVES

Formulated alternatives were evaluated based on the study problems, opportunities, objectives and constraints **(Section 2.2)**. Modeling analysis was conducted on the initial array of alternatives to determine the efficacy of flood reduction in the Taylor County–Steinhatchee project area. The alternatives were evaluated comparing the existing condition with the proposed condition of WSE. Each alternative was evaluated under 1%, 2%, 4%, and 10%, 24-hr AEP storms. Special note was taken in this report for the 2%, 24-hr AEP storm because of the county's responsibility to protect the project area under this condition.

The modeling showed alternatives 1 through 7 did not provide sufficient flood reduction to WSE levels for the entire project area (areas of concern in the east and west portions). Alternatives 1 through 7 independently either reduced flooding in one area of concern or the other but not simultaneously. Therefore, the team combined alternatives 1 through 7 into the final array for further modeling and analysis and optimization.

Table 2-2: Initial and Final Array Alternatives with detail descriptions of their locations and methods.

	Alternative	Detailed Description
Initial Array of Alternatives	No action	N/A
	Alternative 1	Culvert expansion at 1st Avenue South, flood-proofing
	Alternative 2	Culvert invert drop and expansion at 2nd Avenue South, flood-proofing
	Alternative 3	Culvert construction at 7th Street East and 20-foot bottom width channel, flood-proofing
	Alternative 4	Culvert construction at 13th Street East, Culvert construction along Central Avenue, and 20-foot bottom width channel construction, flood-proofing
	Alternative 5	Culvert construction at 13th Street East, pump addition, and 20-foot bottom width channel construction, flood-proofing

	Alternative	Detailed Description
	Alternative 6	Regrade and Raise 13th Street East and Central Avenue to 9-foot, flood-proofing
	Alternative 7	Culvert Expansion at 4th Street East and Allen Lane, 40-foot bottom width channel construction, flood-proofing
Final Array of Alternatives	Alternative 8	Culvert expansion at 1st Avenue South; culvert invert drop and expansion at 2nd Avenue South; and culvert addition at 7th Street East with 20-foot bottom width channel construction, flood-proofing. (Combination of Alternatives: 1,2 and 3)
	Alternative 9	Culvert expansion at 1st Avenue South; culvert invert drop and expansion at 2nd Avenue South; culvert addition at 7th Street East with 20-foot bottom width channel; and culvert expansion at 4th Street East and Allen Lane with 40-foot bottom width channel, flood-proofing. (Combination of Alternatives: 1, 2, 3 and 7)
	Alternative 10	Culvert expansion at 1st Avenue South; culvert addition at 13th Street East with culvert addition Along Central Avenue and 20-foot bottom width channel; regrade and raise 13th Street East and Central Avenue to 9-foot, flood-proofing. (Combination of Alternatives: 1, 4, and 6)
	Alternative 11	Culvert expansion at 1st Avenue South; culvert addition at 13th Street East with pump addition and 20-foot bottom width channel; regrade and raise 13th Street East and Central Avenue to 9-foot, flood-proofing. (Combination of Alternatives: 1, 5, and 6)
	Alternative 12	Culvert Expansion at 1st Avenue South; culvert invert drop and expansion at 2nd Avenue South; culvert addition at 7th Street East and 20-foot bottom width channel; culvert addition at 13th Street East, culvert addition along Central Avenue, and 20-foot bottom width channel; regrade and raise 13th Street East and Central Avenue to 9-foot; culvert expansion at 4th Street East and Allen Lane, 40-foot bottom width channel, flood-proofing. (Combination of Alternatives: 1, 2, 3, 4, 6, and 7)
	Alternative 13	Culvert Expansion at 1st Avenue South; culvert invert drop and expansion at 2nd Avenue South; culvert addition at 7th Street East and 20-foot bottom width channel; culvert addition at 13th Street East, pump addition, and 20-foot bottom width channel; regrade and raise 13th Street East and Central Avenue to 9-foot; culvert expansion at 4th Street East and Allen Lane, 40-foot bottom width channel, flood-proofing. (Combination of Alternatives: 1, 2, 3, 5, 6, and 7)
	Alternative 14	Buyouts
	Alternative 15	Relocations
	Alternative 16	Raise first floor elevations

Figure 2-3 shows how these management measures were combined into alternatives. The figure is color coded based on the area of the feature within Taylor County-Steinhatchee. The blue color signifies the western area near 1st Avenue South, the red color signifies the eastern area near the intersection of 13th Street East and Central Avenue, and the purple color signifies the combination of both areas. The alternatives combine and gain complexity as you move further to the right of the figure (i.e., Alternative 10 is a combination of Alternatives 1, 4, 5, and 6).

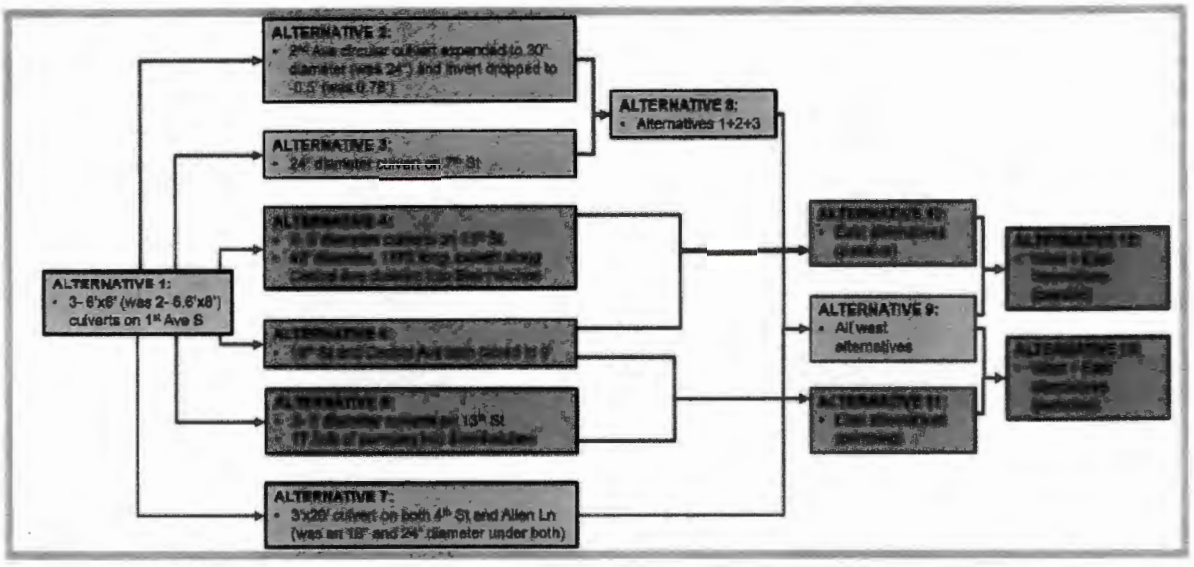

Figure 2-3: Alternatives screening process.

Figure 2-3 depicts the alternatives screening process. Upon completion of modeling the final array, Alternatives 8 through 11 were screened out because they did not address both the east and west areas of concern simultaneously. Analysis performed on Alternatives 12 and 13, resulted in flood risk reduction by comparison of WSE before and after the modeled implementation of the alternatives' components for the 2% AEP storm event therefore determined to be the best performing structural alternatives. The NFS will determine which alternative to implement based on funds availability. Flood risk reduction was measured by the decrease in peak surface water elevation, duration of the flooding and a decreased amount of water outside of the wetland conveyance areas. This metric is further defined within the Engineering Appendix (Appendix A). The non-structural alternatives, Alternatives 14 through 16, were carried into the final array and while they are not listed as components of the best performing alternatives, they are still a viable options Taylor County can implement to reduce flooding impacts for the Steinhatchee community. The additional information in the Engineering Appendix provides greater detail to allow the NMFS to evaluate which of the final alternatives is their best path forward.

Table 2-3: The best performing alternatives (12 and 13) and their components

Alternative	Component	Construction Cost	Alternative 12	Alternative 13
2	Existing single-barrel, 24-inch-diameter culvert under 2nd Avenue South was replaced with a single-barrel, 30-inch-diameter culvert at an invert 1.28 feet lower	$19,000	X	X
3	24-inch-diameter culvert was added under 7th Street East	$12,000	X	X
3	Add Channel at New Culvert at 7th St. East	$458,000	X	X

Best Performing Alternatives Cost Estimates

Alternative	Component	Construction Cost	Alternative 12	Alternative 13
4b	Add Elliptical Inlet via open excavation at the entrance to the culvert at Central Avenue	$39,000	X	
4b	An 1,870-foot-long, single-barrel, 42-inch-diameter culvert that discharges into the river was added along Central Avenue using the open trench method	$910,000	X	
4b & 5b	A double-barrel, 36-inch-diameter culvert was added south of the 13th Street East and Central Avenue intersection	$187,000	X	X
4b & 5b	A double-barrel, 36-inch-diameter culvert was added north of the 13th Street East and Central Avenue intersection	$27,000	X	X
4b & 5b	Add Culvert under 13th St. North and South of Central	$157,000	X	X
5b	A pump was added on the west end of Central Avenue that discharges into the river	$3,504,000		X
5b	An 1,870-foot-long, single-barrel, 18-inch-diameter culvert that discharges into the river was added along Central Avenue using the open trench method	$381,000		X
6	Raise 13th St. East & Central Avenue	$267,000	X	X
7	A single-barrel, 3-foot x 20-foot box culvert was added under 4th Street East	$129,000	X	X
7	A single-barrel, 3-foot x 20-foot box culvert was added under Allen Lane	$99,000	X	X
7	Re-grading of County-owned ROW	$407,000	X	X
Non-structural	Snagging, Clearing, and Flood Proofing		X	X
Total Cost:			**$2,711,000**	**$5,646,000**

3 BEST PERFORMING ALTERNATIVES COST ESTIMATES

Table 2-3 shows the estimated construction costs alongside of the best-performing alternatives. The costs are at FY22 price levels. These estimates include the cost of mobilization, demobilization, adding or expanding culverts at different locations, adding or expanding channels at different locations, regrading a county-owned right of way and raising 13th St East and Central Ave. A 40% contingency markup was used on all the alternatives due to the current level of design. A 10% markup was also included for mobilization/demobilization costs and incidental costs such as traffic control. Some of the studied features may not reduce flooding concerns, but they do add value to the sponsor and local residences.

Some of these project features combined provide flood risk reduction but have varied initial construction cost and annual operation and maintenance requirements.

The costs do not include design, real estate, or permitting costs. Alternative 1 was not added to the cost table due to discussions with the NFS and their current ongoing action of performing the work included in this alternative. Attachment 2 of the Engineering Appendix (Appendix A) provides the approved cost estimate. Any differences in the terrain, soil properties, or design will result in a risk of cost increases. The presence of any contamination or endangered species in the project area will also risk cost increases. The limited scope feasibility study results in the risks to cost and design changes described in Section 11 of the Engineering Appendix (Appendix A).

The costs of two construction methods for installing drainage pipe were developed for Alternatives 4 and 5. The costs for the open trench construction method are shown in the tables above, while the costs for the directional drilling method can be found in Attachment 2 of the Engineering Appendix (Appendix A). The cost prohibitive nature of the directional drilling method directed the team to continue forward with only the open trench construction method into the best performing alternatives recommendations (Alternatives 12 and 13).

The pump station cost is based on similar pump station projects completed by USACE, Jacksonville District. The cost was calculated using an average $/CFS unit price. Associated work usually included in pump station projects, such as excavation, is assumed to be included in the price **(Table 2-3)**.

Due to a constrained budget for this project, optimization of the sizing and placement of the culverts will need to be further evaluated during full design. Additional optimization should be considered during design. Due to the elevation rising eastward, a single pump station and single culvert were studied. It is possible to have a hybrid of a pump station and multiple culverts that could be more cost effective. Ideally, a pump station would discharge into a culvert system that would discharge to the Steinhatchee River. The effectiveness of this option would need to be determined.

4 REAL ESTATE REQUIREMENTS

This project's best performing alternatives will require the acquisition of perpetual and temporary real estate easements. The alternatives consist of culvert work, channel improvements and one area of a road being raised. Project parcels for the alternatives have been identified by the Property Appraiser site and are shown in **Figure 4-1** through **Figure 4-5**. The estates identified will include a Temporary Work Area easement for staging areas and construction access for any work to be done, Perpetual Channel Improvement, Perpetual Flowage (occasional flooding) and Perpetual Snagging and Clearing easements or the placement of new, additional, and modified culverts within the footprint of the project in Taylor County-Steinhatchee. Some of the work will have associated utility relocation features.

This project is located within the community of Steinhatchee, Taylor County. Access to construction sites, staging areas, etc. will be via existing public right-of-way and streets.

Figure 4-1: Map of Steinhatchee West.

Figure 4-2: Map of northern Steinhatchee East.

Figure 4-3: Map of Steinhatchee East.

Figure 4-4: Map of Steinhatchee East.

Figure 4-5: Map of southern Steinhatchee East.

5 ENVIRONMENTAL PERMITTING

Taylor County will be required to receive a Department of the Army permit through the USACE Regulatory Division in order to comply with all laws and regulations pertaining to the NEPA in the planning, development, construction, and post-construction phases of the project. As of December 22, 2020, the State of Florida assumed the Environmental Protection Agency's (EPA) 404(b)(1) permitting program from the USACE Jacksonville District Regulatory Division (RD) with some waters of the United States being retained by the USACE-RD. The Steinhatchee River is listed on the USACE "Retained Waters" list, and wetland impacts located within the 300-foot administrative boundary would be under the jurisdiction of RD, including any impacts related to the project that extend beyond the landward limit of the administrative boundary. **Figure 5-1** shows the wetlands in the project vicinity and **Figure 5-2** shows the map for waters retained by RD. This would require Taylor County to apply for a 404 permit through USACE RD. As part of the 404 permit process, USACE RD would ensure NEPA compliance, including consultations under the Endangered Species Act, National Historic Preservation Act, , and other environmental laws are regulations. The permitting process with RD will give authorization for the discharge of fill into waters of the U.S. and conclude any consultations required to comply with any applicable laws and regulations.

Figure 5-1. Wetland Map.

Figure 5-2. Map of Retained Waters.

5.1 CLEAN WATER ACT COMPLIANCE

A desk review of the proposed action area shows the project site and proposed alternatives encompasses waters of the United States. A wetland delineation will need to be performed to determine the limits of the freshwater/saltwater wetlands throughout the project site and provide a baseline and potential cost for the permitting process. A mitigation plan will be necessary for loss of wetland functions due to construction activities and will be determined through the proposed impacts and a functional assessment (i.e., Uniform Mitigation Assessment Methodology).

5.2 ENDANGERED SPECIES COMPLIANCE

A review of the project site notes there are multiple endangered and threatened species that could be present in the vicinity. These species include Eastern Black Rail (*Laterallus jamaicensis* ssp. *jamaicensis*), wood stork (*Mycteria americana*), Eastern Indigo snake (*Drymarchon corais couperi*), gopher tortoise (*Gopherus polyphemus*) (Candidate Species), Monarch butterfly (*Danaus plexippus*) (Candidate Species), and West Indian manatee (*Trichechus manatus*). **Figure 5-3** shows the project area reviewed for the presence of threatened and endangered species. The potential presence of these species could result in the necessity of consultation with the U.S. Fish and Wildlife Service (USFWS), depending on the specific habitats impacted in the project sites. This consultation will be included in the permitting process with USACE RD. The project location is not within any critical habitats for any listed species.

Figure 5-3: ESA Review Area.

5.3 STATE OF FLORIDA PERMIT

Taylor County will apply for an environmental resource permit through the State of Florida. Due to the project likely being under the jurisdiction of USACE, the State permit will not include any other consultations with resource agencies. The process of application and receipt of the permit will provide all the necessary requirements to proceed with the project at the State level. It is recommended to initiate the permit application process as the earliest possible time through preapplication discussions and submissions once construction documents are compiled.

6 CULTURAL RESOURCES COMPLIANCE

Permitting requirements for this project will require a USACE Section 404 permit. This includes NEPA compliance, as well as compliance with Appendix C of 33 C.F.R. Part 325 (Navigation and Navigable Waters). In addition, if State of Florida funds are utilized, Chapter 267 of the Florida Statutes may apply and require coordination with the Florida Bureau of Archaeological Research to consider effects to Florida's cultural resources.

Seven different soil units are mapped for the new, expanded, or replaced culverts, and each unit is characterized as poorly or very poorly drained exhibiting qualities inconsistent with high potential for archaeological deposits. The general area within which the identified measures are located has seen fairly significant development since at least the early 1950s based on a review of historic aerial mapping.

The identified measures are located in areas that have been previously filled to create the roadways currently blocking water flow. Such areas are generally considered to have low potential to contain archaeological deposits areas The identified plan would not result in effects that would reasonably adversely impact other cultural resources, such as historic structures or districts. Although a potential

possibility, it is reasonable to assume the USACE will not require a cultural resources assessment survey as part of the Section 404 permit application. There is a potential to directly impact cultural resources depending on the location of the staging of construction equipment. During the development of project plans, staging areas should be limited to areas of existing fill and/or previous disturbance in order to avoid potential effects to cultural resources.

7 SUMMARY

The identified alternative components include the expansion, replacement, and/or construction of new drainage culverts at four locations surrounding a wetland bisected by 1st Avenue South and bounded on the east and west by 7th Street East and 4th Street East respectively, as well as the construction of culverts along Central Avenue and 13th Street East, a pumpstation at Central Avenue, and the raising of 13th Street East **(Table 2-1)**. The team discussed options at length for the best path forward through the iterative plan formulation process and after the engineering analysis. It was determined Alternative 12 and Alternative 13 are the best structural options for the Taylor County-Steinhatchee project area. Alternative 12 contains an active pumping component while 13 is passive **(Table 2-3)**. The final selected alternative will be decided on by the NFS given funding availability. Additionally, the NFS could pursue any of the non-structural management measures as viable options.

8 ACRONYMS

AEP – Annual Event Probability

CFS – Cubic Feet per Second

EPA – Environmental Protection Agency

ESA – Endangered Species Act

FDEP – Florida Department of Environmental Protection

FEMA- Federal Emergency Management Agency

FPMS – Flood Plain Management Services

HEC – Hydrologic Engineering Center

HEC-RAS – Hydrologic Engineering Center River Analysis System

LiDAR – Light Detection and Ranging

NEPA – National Environmental Policy Act

NFS – Non-Federal Sponsor

NHPA – National Historic Preservation Act of 1966

NRHP – National Register of Historic Places

PDT – Project delivery team

SHPO – State Historic Preservation Office

RD – Regulatory Division

USACE – U.S. Army Corps of Engineers

USFWS – U.S. Fish and Wildlife Service

WSE - Water Surface Elevation

Engineering Appendix for Steinhatchee

Taylor County, Florida

Floodplain Management Services

Last Updated: November 2022

US Army Corps of Engineers®
Jacksonville District

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1 INTRODUCTION

1.1 Location

The Taylor County (Steinhatchee) Floodplain Management Services (FPMS) Project study area is in Taylor County, Florida. Figure 1-1 shows the location of the study area.

Figure 1-1: Location Map

1.2 Study Purpose

The Jacksonville District of the U.S. Army Corps of Engineers (USACE) was tasked to assist Taylor County, Florida, the Non-Federal Sponsor (NFS), in identifying long-term structural and nonstructural flood risk management measures. These measures were designed to alleviate erosion and reduce flooding associated with heavy rain events, specifically in the community of Steinhatchee, north of the Steinhatchee River. The watershed system around Steinhatchee is comprised of a suburban system that flows south and ultimately drains into the Steinhatchee River. Figure 1-2 shows an aerial image of the project features and highlighted areas of concern.

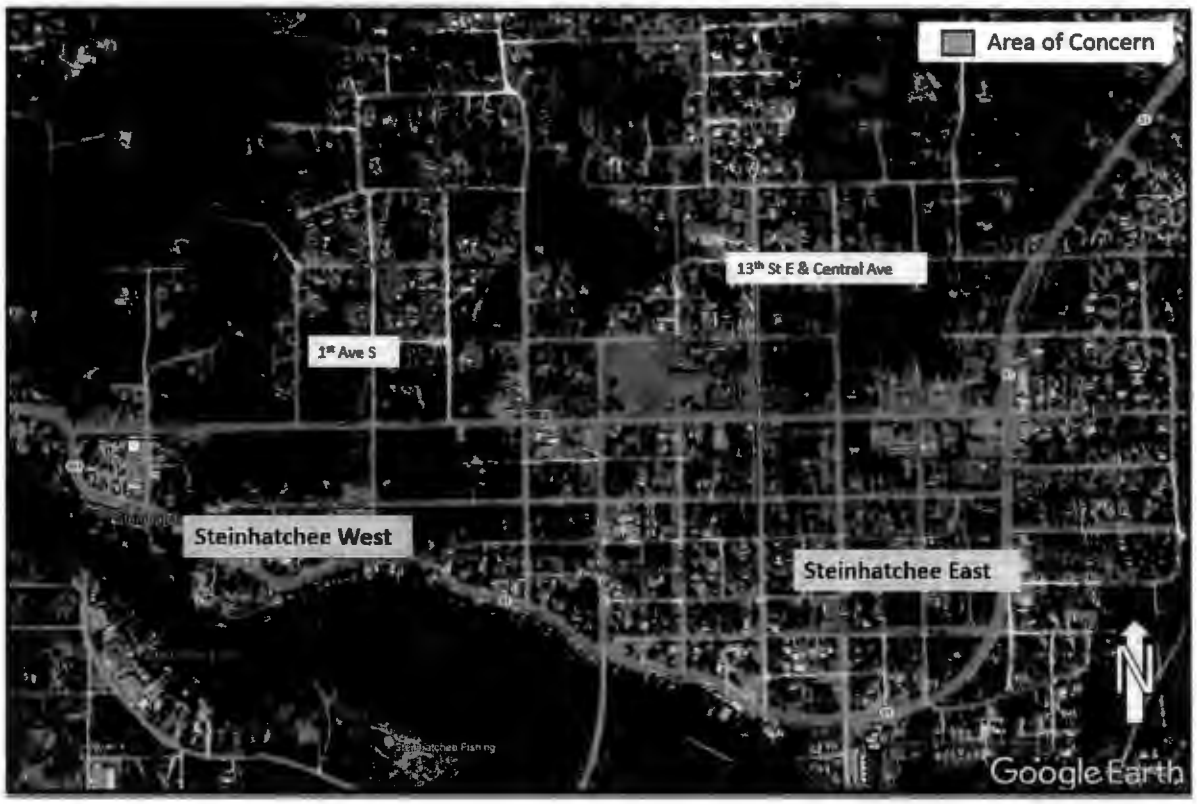

Figure 1-2: LiDAR Map Showing Project Features

This study includes hydrologic and hydraulic analyses for the watershed in Taylor County. This appendix documents the Taylor County Hydrologic Engineering Center's Hydrologic Modeling System (HEC-HMS) and Hydrologic Engineering Center's River Analysis System (HEC-RAS) model development and calibration. This appendix further documents the application of the modeling to evaluate alternatives to reduce flooding risks.

The alternatives, as developed by the Project Delivery Team (PDT), were analyzed using the hydrologic and hydraulic models. Other factors, including minimized environmental impacts and low maintenance requirements, were also considered to select the alternatives analyzed in this appendix. The recommended plan includes various alternative features in several areas of Steinhatchee. Eight management measures were evaluated, including the following features, either separately or combined into separate alternatives.

- Existing channel expansion
- Culvert expansion at 1st Avenue South
- Culvert lowering and expansion at 2nd Avenue South
- Culvert addition at 7th Street East

- Culvert addition at 13th Street East coupled with culvert addition along Central Avenue
- Culvert addition at 13th Street East coupled with pump addition along Central Avenue
- The regrading and raising of 13th Street East and Central Avenue to an elevation that prevents overtopping a 2% Annual Exceedance Probability (AEP) storm
- Culvert expansion at both 4th Street East and Allen Lane

2 HYDROLOGIC MODELING

USACE applied HEC-RAS version 6.0 to model both hydrology and hydraulics for the Town of Steinhatchee in Taylor County, Florida. HEC-RAS has new capabilities that allow for modeling of rainfall excess simultaneous with hydraulic routing. The following paragraphs summarize the hydrologic inputs for the Steinhatchee HEC-RAS model including watershed boundary, runoff and infiltration parameters, rainfall data, and tidal data.

2.1 Watershed Boundary

USACE delineated the watershed boundary used to define the HEC-RAS model domain from the latest available topographic data (2018 U.S. Geological Survey LiDAR) using the HEC-HMS version 4.8 terrain processing and delineation tools. The total watershed area is 1.89 square miles. Figure 2-1 illustrates the contributing watershed boundary and the 2018 U.S. Geological Survey (USGS) Light Detection and Ranging (LiDAR) data.

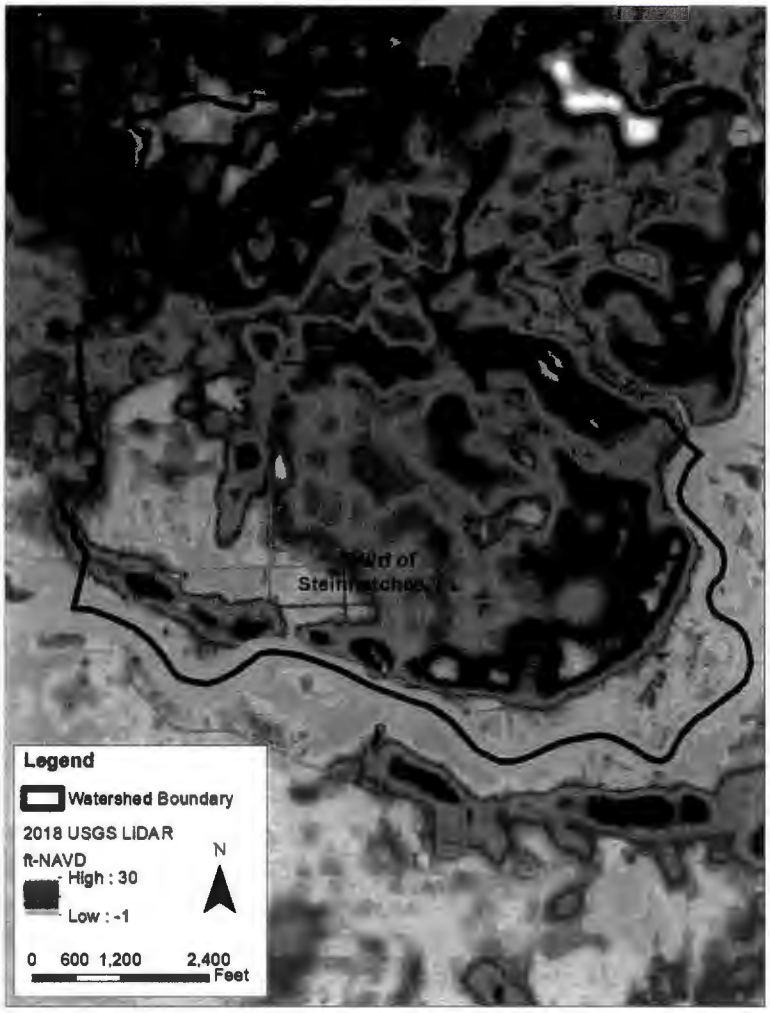

Figure 2-1: Steinhatchee Watershed Boundary and 2018 USGS LiDAR

2.2 Runoff and Infiltration Parameters

USACE applied the Soil Conservation Services Curve Number (CN) method within HEC-RAS to compute infiltration losses and rainfall excess based on the latest available land use and percent impervious data (2019 USGS National Land Cover Database (NLCD)) and soils data (2019 Natural Resources Conservation Service (NRCS) Gridded Soil Survey Geographic Database (gSSURGO)). HEC-RAS computes rainfall excess with the Soil Conservation Service's CN method by subtracting infiltration losses from the accumulated rainfall depth using the equations below. HEC-RAS then performs 2D hydraulic routing of the computed rainfall excess.

$$Pe = \frac{(P - Ia)^2}{(P - Ia) + S}$$

$$Ia = 0.2S$$

$$S = \frac{1000 - 10CN}{CN}$$

Where:

Pe = Rainfall excess (in)

P = Accumulated rainfall depth (in)

Ia = Infiltration Loss (in)

S = Potential maximum retention (in)

CN = Curve number

USACE assigned CN values based on land use and hydrologic soil group using typical values published by NRCS (TR-55). Dual hydrologic soil groups such as A/D, B/D, C/D are treated as type D to represent saturated condition. For developed areas, USACE assigned CN values representative of open space in good condition for pervious areas and applied the NLCD percent impervious data – as opposed to using CN values for urban areas, which have an assumed percent impervious factored in. The method applied is more physically based and recommended by the HEC-RAS 2D Modeling User's Manual. During the model calibration process, USACE reduced the percent impervious values for developed areas by 25% to arrive at results close to field observations. Figure 2-2, Figure 2-3, and Figure 2-4 illustrate the 2019 NLCD land use types, 2019 NLCD percent impervious, and 2019 NRCS gSSURGO hydrologic soils group, respectively.

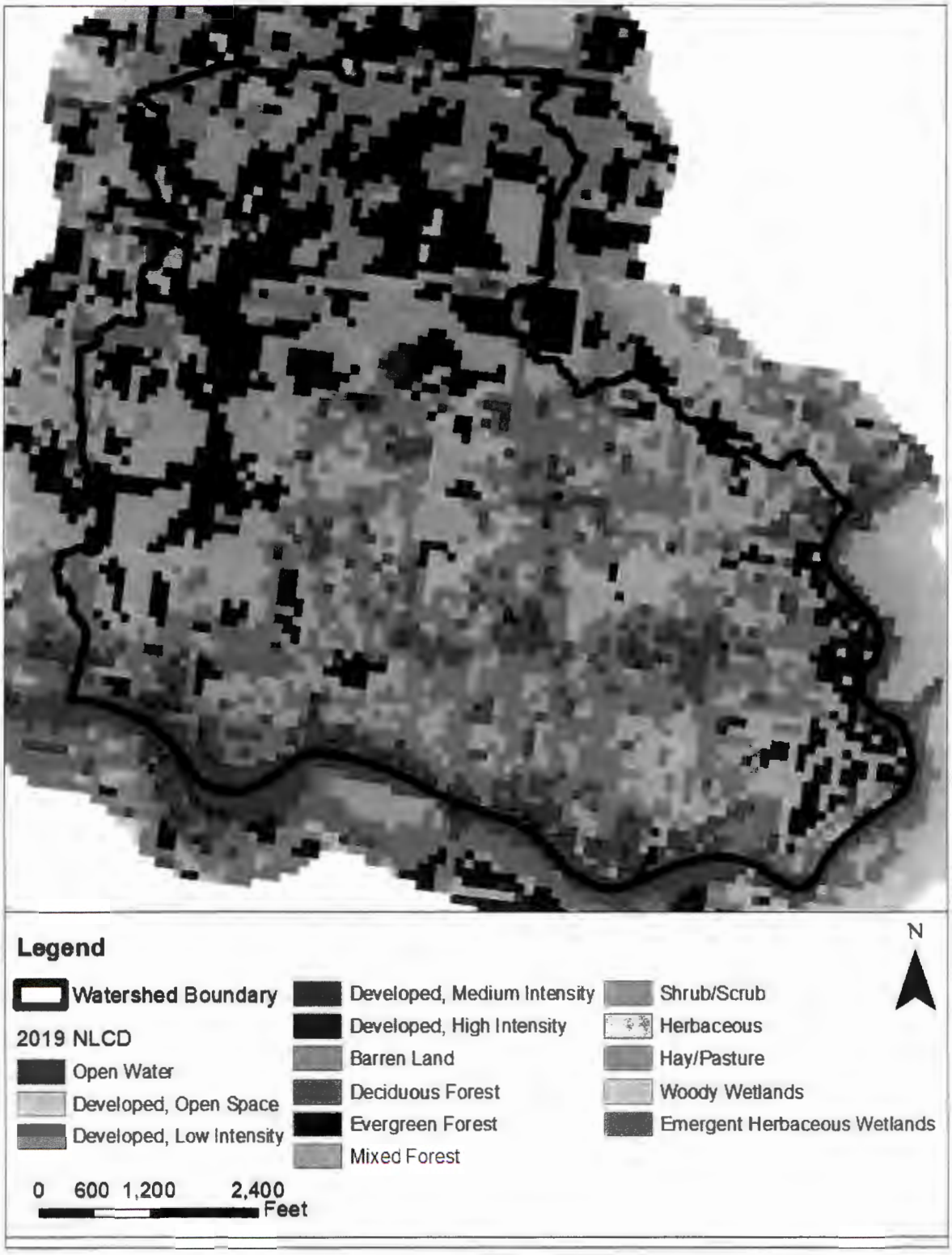

Figure 2-2: 2019 NLCD Land Use Types

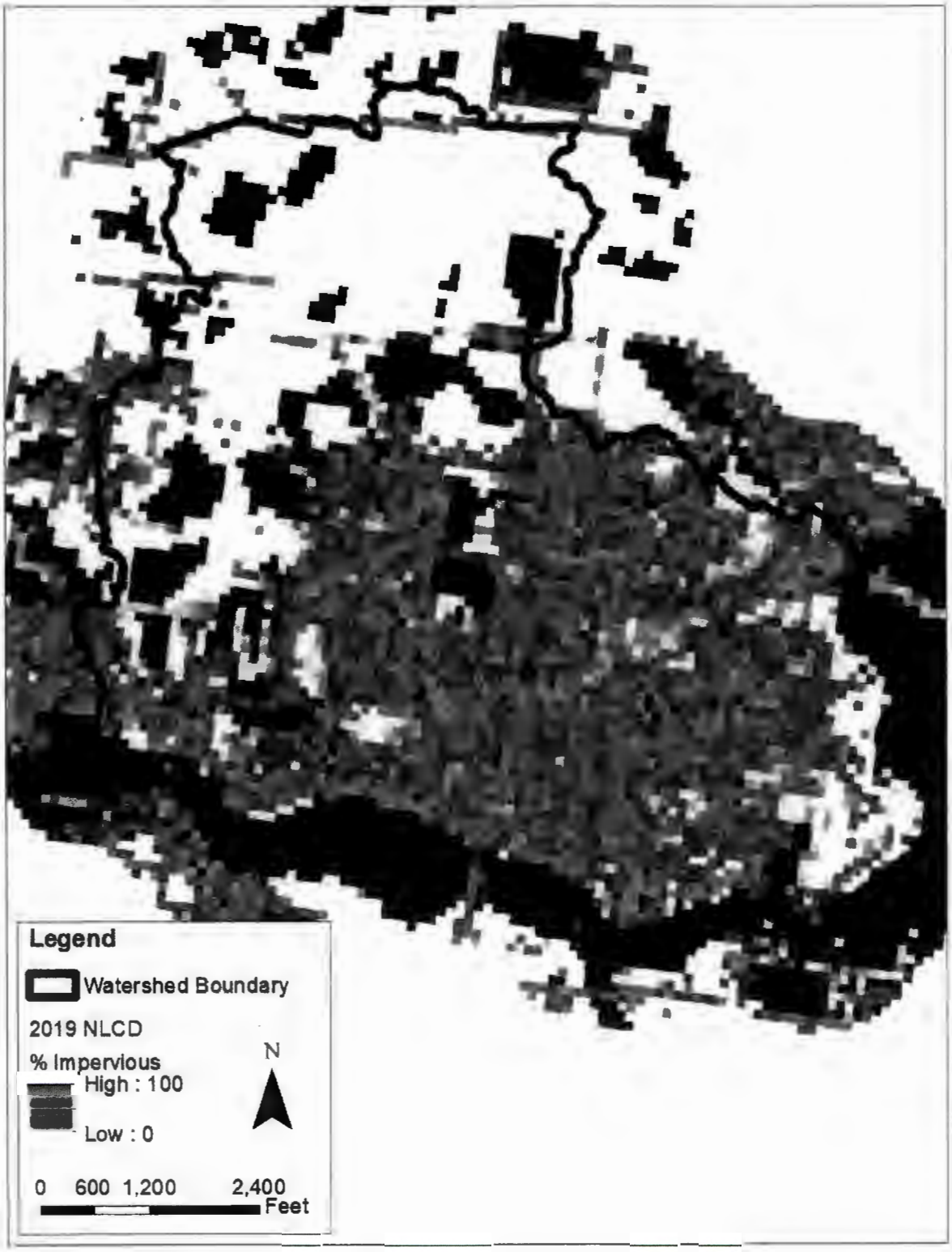

Figure 2-3: 2019 NLCD Percent Impervious

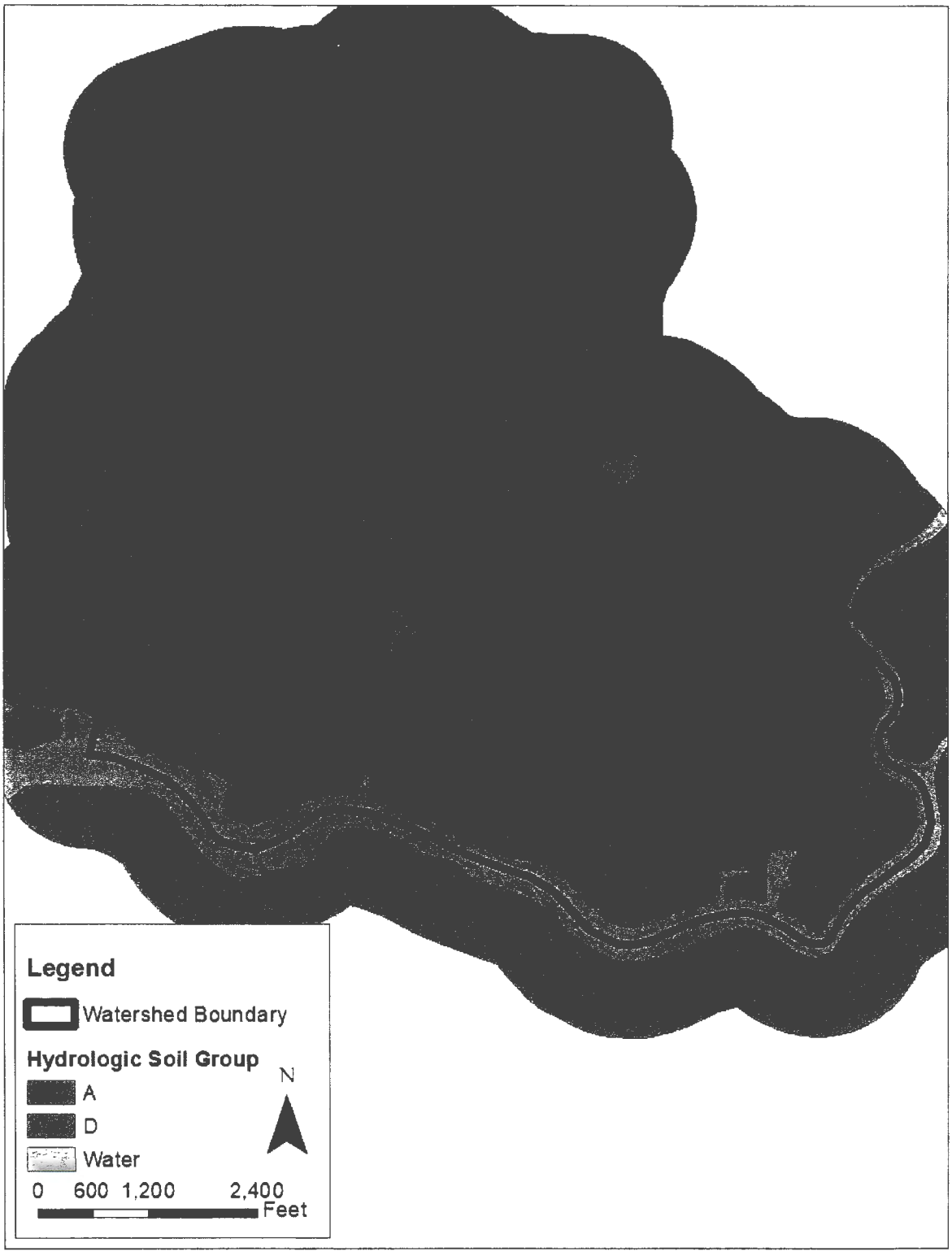

Figure 2-4: 2019 NRCS gSSURGO Hydrologic Soil Groups

Table 2-1 provides a summary of the runoff and infiltration parameters. In addition, USACE assigned Manning's "n" values based on the 2019 NLCD land use data using typical values published in the HEC-RAS technical reference. Table 2-2 provides a summary of the Manning's "n" values for each land use type.

Table 2-1: Summary of Runoff and Infiltration Parameters

NLCD Land Use Type	NRCS Hydrologic Soil Group	Curve Number	% Impervious
Barren Land	A	39	0
Barren Land	D	80	0
Deciduous Forest	A	25	0
Deciduous Forest	D	77	0
Developed, High Intensity	A	39	60.00 - 75.00
Developed, High Intensity	D	80	60.00 - 75.00
Developed, Low Intensity	A	39	15.75 - 36.75
Developed, Low Intensity	D	80	15.75 - 36.75
Developed, Medium Intensity	A	39	37.5 - 59.25
Developed, Medium Intensity	D	80	37.5 - 59.25
Developed, Open Space	A	39	0.75 - 14.25
Developed, Open Space	D	80	0.75 - 14.25
Emergent Herbaceous Wetlands	A	98	100
Emergent Herbaceous Wetlands	D	98	100
Evergreen Forest	A	25	0
Evergreen Forest	D	77	0
Hay/Pasture	A	39	0
Herbaceous	A	30	0
Herbaceous	D	78	0
Mixed Forest	A	25	0
Mixed Forest	D	77	0
Open Water	A	100	100
Open Water	D	100	100
Shrub/Scrub	A	30	0
Shrub/Scrub	D	78	0
Woody Wetlands	A	98	100
Woody Wetlands	D	98	100

Notes

1. % Impervious ranges for developed areas based on gridded NLCD values reduced by 25% for calibration.
2. % Impervious values for Emergent Herbaceous Wetlands, Open Water, and Woody Wetlands assigned 100% impervious due to presence of surface water.
3. Dual hydrologic soil groups such as A/D, B/D, C/D are treated as type D to represent saturated condition.

Table 2-2: Manning's "n" Values

NLCD Land Use Type	Manning's "n" Value
Barren Land	0.03
Deciduous Forest	0.2
Developed, High Intensity	0.2
Developed, Low Intensity	0.12
Developed, Medium Intensity	0.16
Developed, Open Space	0.05
Emergent Herbaceous Wetlands	0.085
Evergreen Forest	0.16
Hay/Pasture	0.05
Herbaceous	0.05
Mixed Forest	0.2
Open Water	0.035
Shrub/Scrub	0.16
Woody Wetlands	0.15

2.3 Rainfall Data

USACE applied National Oceanic and Atmospheric Administration (NOAA) Multi-Radar/Multi-Sensor System gridded rainfall data for two historic rainfall events that impacted the Town of Steinhatchee, FL for purposes of model calibration and validation.

Tropical Storm Elsa passed over the Town of Steinhatchee between 3 July and 8 July 2021 dropping most of its rainfall (7 to 8.5 inches) between 6 July and 8 July 2021. Figure 2-5 illustrates the total accumulated rainfall simulated between 6 July and 8 July 2021, and Figure 2-6 is a plot of the hourly rainfall at the intersection of 1st Avenue South and 7th Street East over the simulation period.

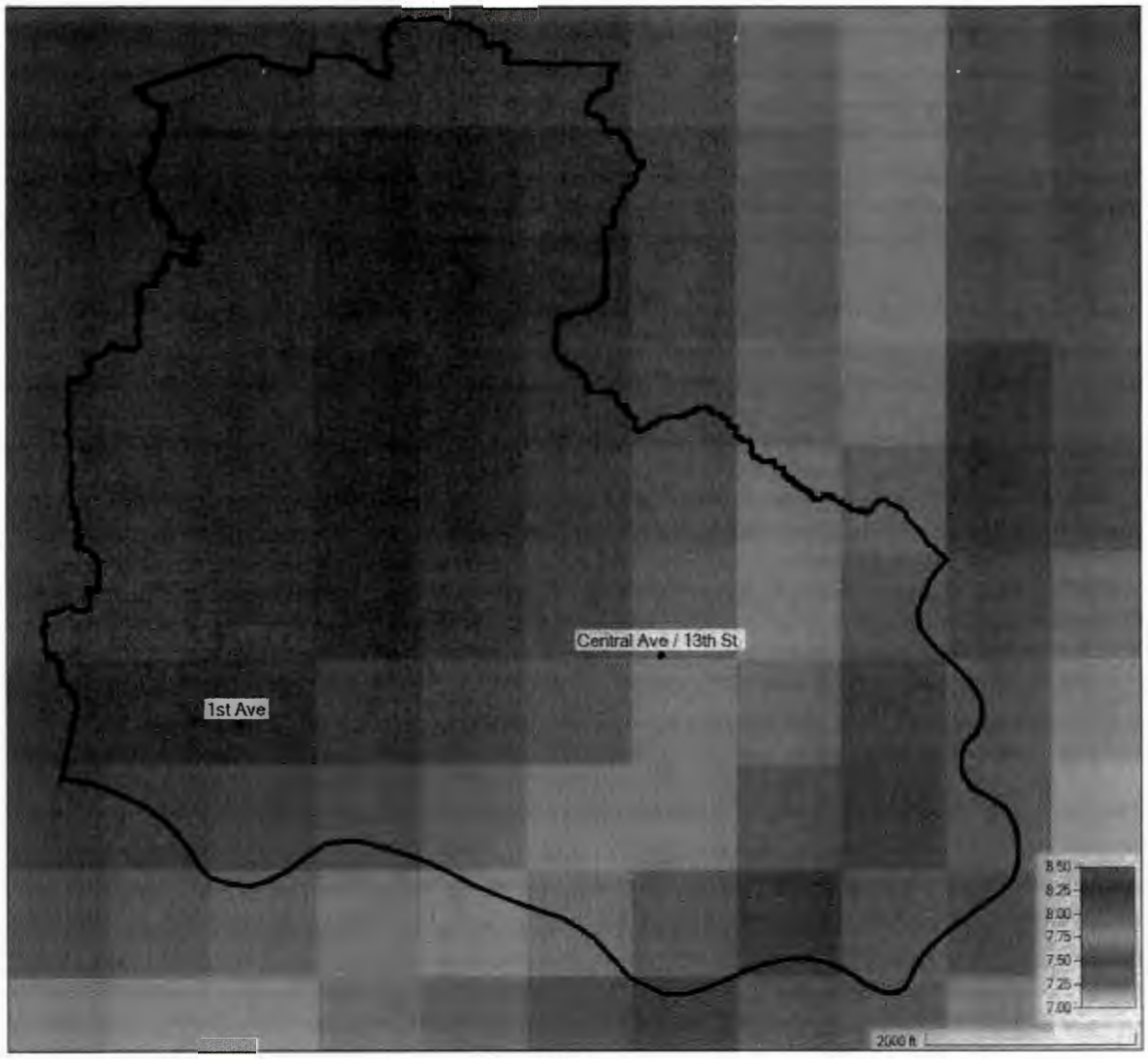

Figure 2-5: Tropical Storm Elsa Accumulated Rainfall (6 July - 8 July 2021)

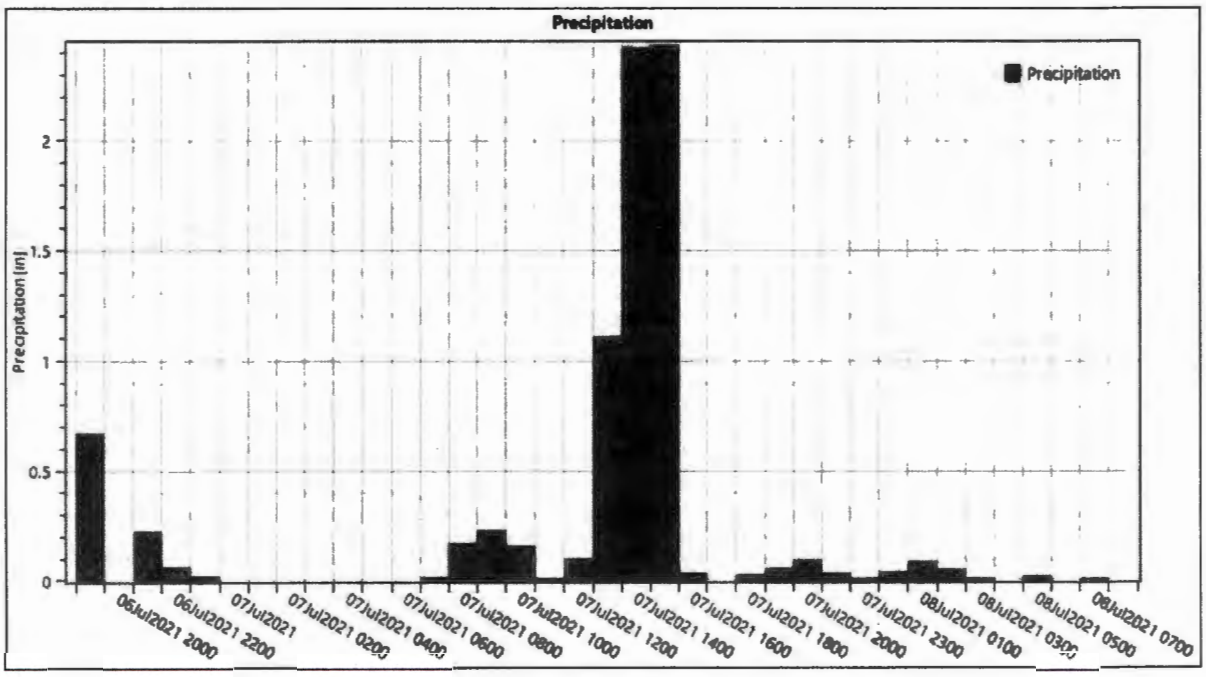

Figure 2-6: Tropical Storm Elsa Hourly Rainfall (6 July - 8 July 2021)

A local unnamed storm event passed over the Town of Steinhatchee between 15 August and 19 August 2019 dropping between 25 to 30 inches of rainfall. Figure 2-7 illustrates the total accumulated rainfall simulated between 15 August and 19 August 2019, and Figure 2-8 is a plot of the hourly rainfall at the intersection of 1st Avenue South and 7th Street East over the simulation period.

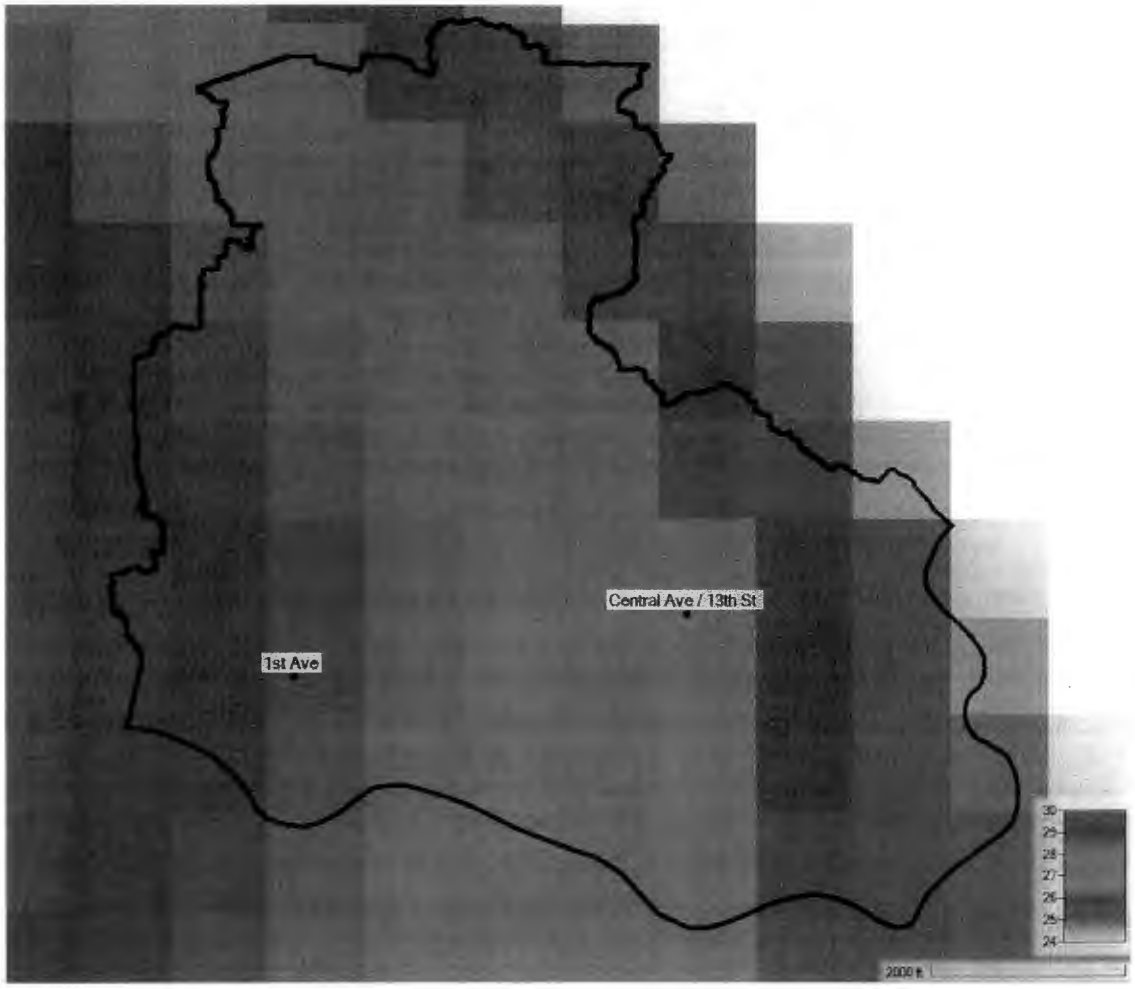

Figure 2-7: Unnamed Storm Accumulated Rainfall (15 August - 19 August 2019)

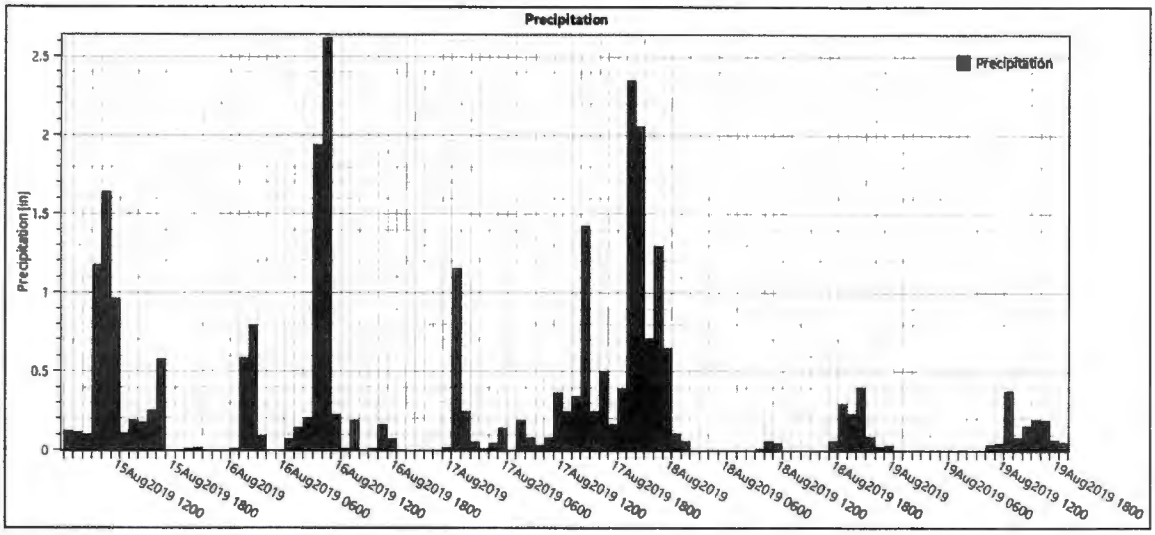

Figure 2-8: Unnamed Storm Hourly Rainfall (15 August - 19 August 2019)

USACE applied 24-hr duration NOAA Atlas-14 Volume 9 precipitation depths for the 50%, 20%, 10%, 4%, 2%, and 1% AEP synthetic storm events, which correspond to the 2-, 5-, 10-, 25-, 50-, and 100-year recurrence intervals, respectively. USACE applied an area reduction factor of 99.7% based on the NOAA TP-40 area-depth curves to reduce the point rainfall estimates based on the watershed area of 1.89 square miles. The rainfall depths were temporally distributed using the NOAA Atlas 14 Volume 9, Southeastern Region 2, Second Quartile, 50% occurrence temporal pattern. Table 2-3 provides a summary of the area-depth adjusted precipitation amounts. Figure 2-9 shows the temporal pattern applied, and Figure 2-10 shows the precipitation depth hyetographs for each storm event.

Table 2-3: NOAA Atlas-14 Precipitation Depths, 24-Hr Duration

Annual Exceedance Probability	50%	20%	10%	4%	2%	1%
Return Interval	2-year	5-year	10-year	25-year	50-year	100-year
Atlas-14 Precipitation Depth	5.24	6.57	7.88	9.98	11.8	13.9
Area Depth Adjusted	5.23	6.55	7.86	9.95	11.77	13.86

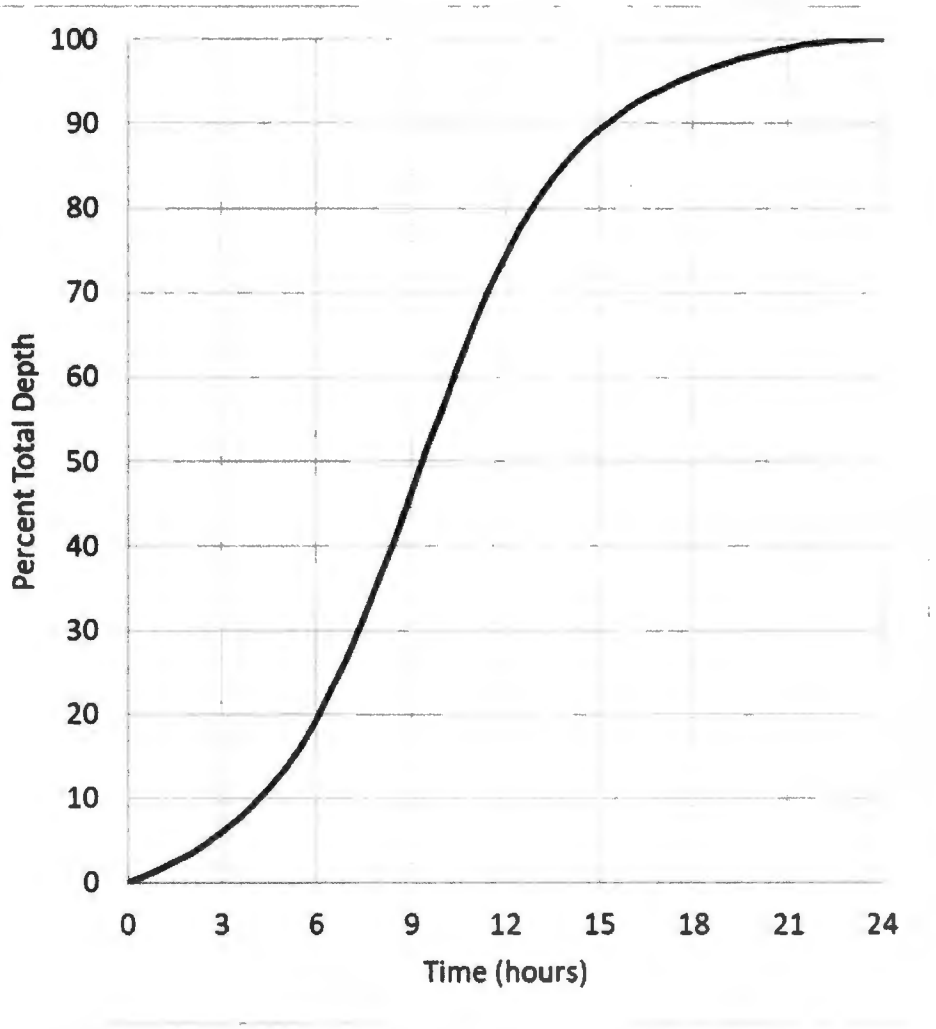

Figure 2-9: NOAA Atlas-14 Temporal Distribution (Southeast Region 2, Second Quartile, 50% Occurrence)

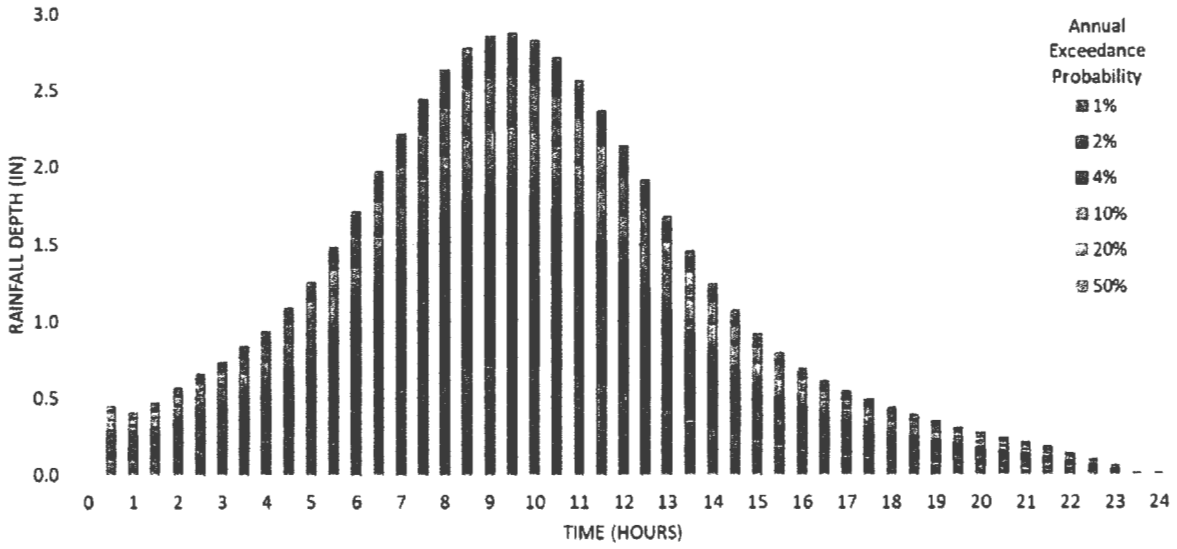

Figure 2-10: NOAA Atlas-14 Precipitation Hyetographs (area-depth adjusted)

2.4 Tidal Data

USACE applied observed tidal stages as boundary conditions for the HEC-RAS model at Steinhatchee River for the calibration and verification events. USGS gauge 02324170 at the Fort Steinhatchee Pier provided observed stages for Tropical Storm Elsa (6 July - 8 July 2021) and the unnamed storm (15 August - 19 August 2019). Figure 2-11 and Figure 2-12 plots the observed stages for Tropical Storm Elsa and the 2019 unnamed storm, respectively.

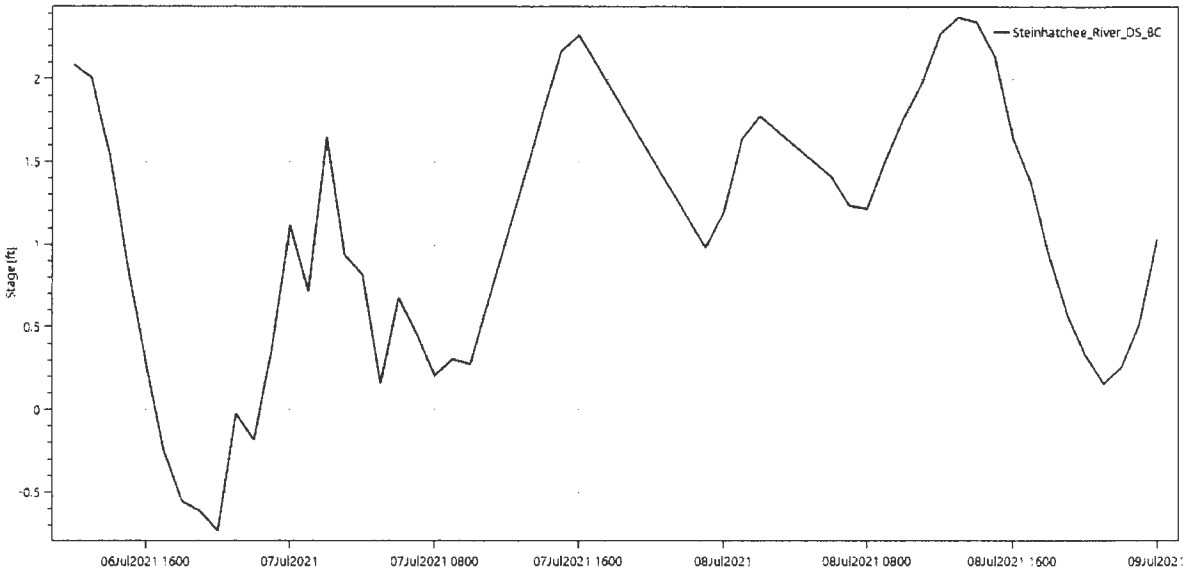

Figure 2-11: Steinhatchee River Tide, Tropical Storm Elsa
USGS Gauge 02324170

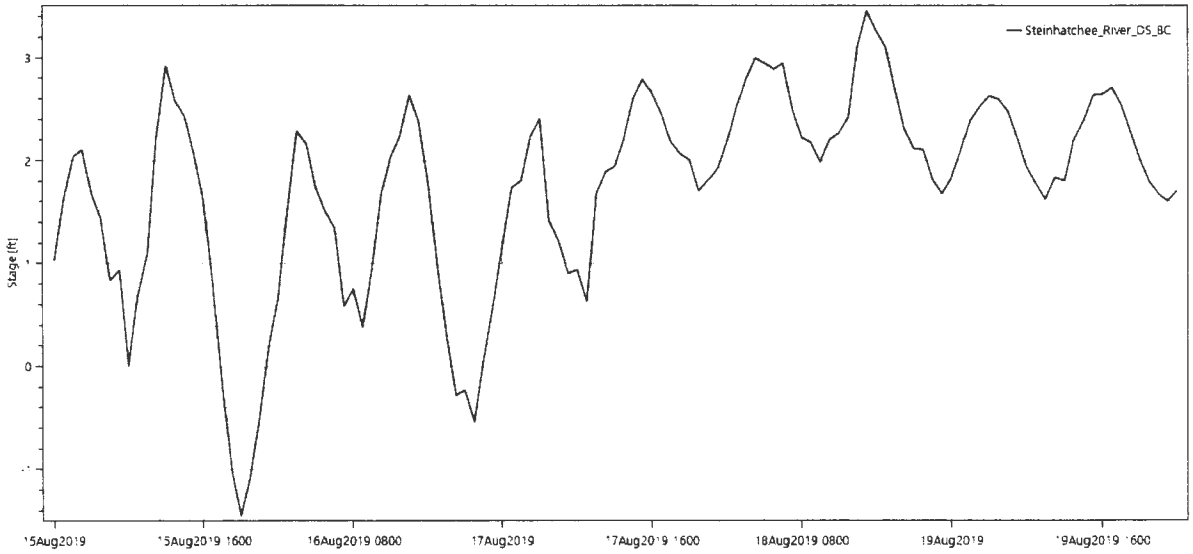

Figure 2-12: Steinhatchee River Tide, 2019 Unnamed Storm
USGS Gauge 02324170

USACE applied mean higher-high water (MHHW) stage of elevation (EL.) 1.65 feet NAVD88 as the HEC-RAS model boundary condition at Steinhatchee River for the 24-hour duration synthetic storm events (50%, 20%, 10%, 4%, 2%, and 1% AEP). Since these events are synthetic, application of observed tidal stage boundary conditions is not applicable as timing peak rainfall runoff to observed tidal data is subjective. The intent of the synthetic storm simulations is to capture the worst-case scenario in terms of flooding; therefore, the MHHW stage is held constant throughout the synthetic storm simulations. The MHHW tidal datum is referenced to NOAA tidal benchmark 8727695 approximately 300 feet west of the Sea Hag Marina. Figure 2-13 illustrates the locations of USGS gauge 02324170 and NOAA tidal benchmark 8727695.

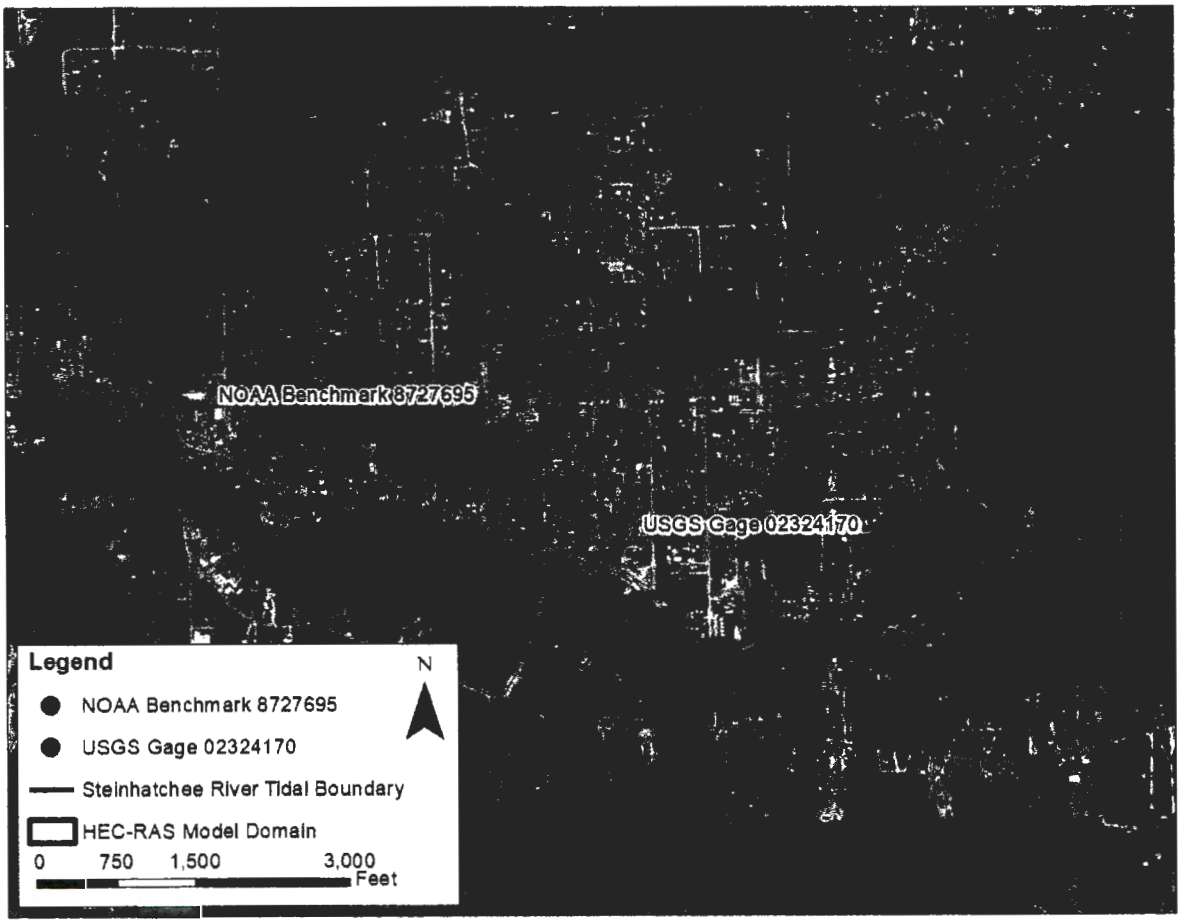

Figure 2-13: Locations of USGS Gauge 02324170 and NOAA Benchmark 8727695

3 HYDRAULIC MODELING

3.1 Hydraulic Model Platform

The HEC-RAS, Version 6.0.0 (May 2021) modeling software was used for developing the Taylor County (Steinhatchee) hydraulic model.

First, a structured 2D computational mesh was generated. Then break lines for levees, roads, and other topographic features were added to further define the mesh. Boundary cells vary in shape and size to follow the detailed polygon boundary. Interior cells can also vary in shape and size as with the cells around the break lines. The computational cells can be triangles, rectangles, or elements with up to eight sides.

The 2D computation mesh is transformed into an elevation-volume curve for each cell and a series of hydraulic property curves for each cell face (elevation vs. wetted perimeter, area, and roughness). These relationships are derived from the details of the underlying terrain used for the model. Each grid cell face is like a detailed cross section, so the flow of water into, through, and out of a cell is controlled by the details of these face properties and the cell elevation-volume relationship. The benefit of this approach is increased hydraulic details at the cell level as opposed to a model that uses a single elevation for each cell and face. With HEC-RAS, users can have much larger cells but still retain significant hydraulic detail within a cell. HEC-RAS cells can be partially wet, so water does not have to cover the entire cell and can move through a portion of the cell.

3.2 Terrain and Survey Data

The HEC-RAS model uses a digital terrain model of surface elevations to perform the hydraulic analysis of the study area. The terrain model for the hydrologic analysis was developed using 1-meter LiDAR elevation data from 2018 that the NFS provided to USACE. Figure 3-1 provides the digital terrain model. All the elevations in this terrain dataset, along with the entirety of the elevations in the hydraulic modeling portion of this report, are referenced to the NAVD88 vertical datum.

Figure 3-1: Digital Terrain Model and the Taylor County (Steinhatchee) HEC-RAS Model Domain

3.3 Development of the Taylor County (Steinhatchee) Hydraulic Model

Figure 3-2 shows the HEC-RAS model schematic, 2D mesh, and break lines. The base mesh cell size for the study area is 25 feet x 25 feet. For the break lines, the near and far spacing varies depending on the location and size of the terrain feature, but in most areas it is 10 feet and 25 feet respectively.

The geometric data generated by RAS Mapper was imported into HEC-RAS. Additional data was entered into the HEC-RAS model geometry based on information gathered from field visits, available documentation, and/or from using standard engineering equations to estimate model parameters. Information collected from field measurement, Google Earth, terrain data, and data received from Taylor County was used to estimate culvert dimensions for input into the HEC-RAS model geometry.

Figure 3-2: Taylor County HEC-RAS Model 2D Mesh and Break Lines

3.3.1 Break Lines

High-elevation roads and low elevation features, like channels and ditches, that will disrupt surface flow were delineated and simulated as break lines (along their centerlines) to better capture the flow of water within the basin. See Figure 3-2 for a schematic of the 2D meshes with break lines.

3.3.2 Culverts

Thirty-five structures and a sinkhole, which will be discussed further in the calibration section, were simulated as culverts using the 2D flow area connection tool. Table 3-1 provides a list, and Figure 3-3 provides a map of all the structures in the 2D meshes, respectively.

Table 3-1: List of all Culverts Simulated in the Model

Name of Structure (in Model)	Type
10thSt_18in	Culvert
10thSt_24in	Culvert
10thSt_Xin	Culvert
1stAveN_02	Culvert
1stAveSouth	Culvert
2ndAveS_24in	Culvert
2ndAveS_30in	Culvert
4thSt	Culvert
6StE_18in	Culvert
6StSE	Culvert
7SteE_18in_02	Culvert
7StE_18in	Culvert
8SteNE_Driveway_	Culvert
8StE_24in	Culvert
9SteNE_18in	Culvert
9StE_14x22	Culvert
9StE_Drvwy_18in	Culvert
9StE_Drvwy_24in	Culvert
9th St E	Culvert
Allen	Culvert
CentralAveNE_18i	Culvert
Driveway_S_2ndAv	Culvert
Drvwy1stAv_Lot1	Culvert
Drvwy1stAv_Lot2	Culvert
DrvwyN2Av18in_02	Culvert

Name of Structure (in Model)	Type
DrvwyN2ndAve_18i	Culvert
DrvwyS1stAv_01	Culvert
DrvwyS1stAv_02	Culvert
Drvwy_nr_7StE	Culvert
Drvwy_N_18in_02	Culvert
Drvwy_N_18in_03	Culvert
Drvwy_N_1stAv_18	Culvert
Drvwy_S_1stAve	Culvert
DvwyN1stAvN_01	Culvert
DvwyN1stAvN_02	Culvert
Sinkhole	Culvert

Figure 3-3: Map of all Culverts Simulated in Model

3.3.3 Manning's "n" Values

Manning's "n" values were assigned based on land cover classification from the 2019 NLCD and did not require adjustment during the calibration process to fit the model result with the observed data. Table 3-2 provides Manning's "n" ranges and values.

Table 3-2: Manning's "n" Ranges and Values for Each Land Cover in the Taylor County HEC-RAS Model

NLCD Land Use Type	Acceptable Manning's "n" Range	Manning's "n" Value
No Data	--	--
Barren Land Rock/Sand/Clay	0.023-0.03	0.03
Deciduous Forest	0.1-0.2	0.2
Developed, High Intensity	0.12-0.2	0.2
Developed, Low Intensity	0.06-0.12	0.12
Developed, Medium Intensity	0.08-0.16	0.16
Developed, Open Space	0.03-0.05	0.05
Emergent Herbaceous Wetlands	0.05-0.085	0.085
Evergreen Forest	0.08-0.16	0.16
Hay/Pasture	0.025-0.05	0.05
Herbaceous	0.025-0.05	0.05
Mixed Forest	0.08-0.2	0.2
Open Water	0.025-0.05	0.035
Shrub/Scrub	0.07-0.16	0.16
Woody Wetlands	0.045-0.15	0.15

3.3.4 Boundary Conditions

The Taylor County (Steinhatchee) model uses two boundary conditions. The first uses the new capabilities of HEC-RAS 6.0.0 that allows for modeling of rainfall excess simultaneous with hydraulic routing, and the second holds a constant MHHW stage of EL. 1.65 feet NAVD88 at Steinhatchee River throughout the 24-hr duration synthetic storm events. The MHHW tidal datum is referenced to NOAA tidal benchmark 8727695. The intent behind the constant MHHW boundary condition is to capture the worst-case scenario in terms of flooding.

Figure 2-10 on page number A-16 shows the rainfall data used in this model for each storm event. Figure 2-13 on page number A-18 illustrates the locations of the Steinhatchee Rivel tidal boundary condition and NOAA tidal benchmark 8727695.

3.4 Taylor County (Steinhatchee) HEC-MODEL Calibration

No recorded stage or flow data was within the study area to calibrate a HEC-RAS model for Taylor County. Instead, a Taylor County HEC-RAS 2D model was calibrated against high-water elevations reported by the NFS.

During the field visit on 13 July 2021, the PDT compiled a list of water-mark estimates from the NFS's team for Tropical Storm Elsa (6 July - 8 July 2021) and an unnamed storm (15 August - 19 August 2019). All the calibration points were based on observed and rough estimates from the NFS, except for a single point on 13th Street East and Central Avenue that was measured by survey rod during the field visit. Also, the NFS indicated that during the 2019 event (15 August - 19 August), rapid flow was observed moving southward, out of the wetland to the south of 1st Avenue South and into the marina. With no existing hydraulic structures connecting those two areas, it was assumed that a sinkhole (below the surface and extending from the wetland south of 1st Avenue South to the marina) provided the hydraulic connection. Figure 3-4 shows the location of the possible sinkhole. Table 3-3 and Figure 3-5 show a summary of the calibration results and the locations of calibration points, respectively.

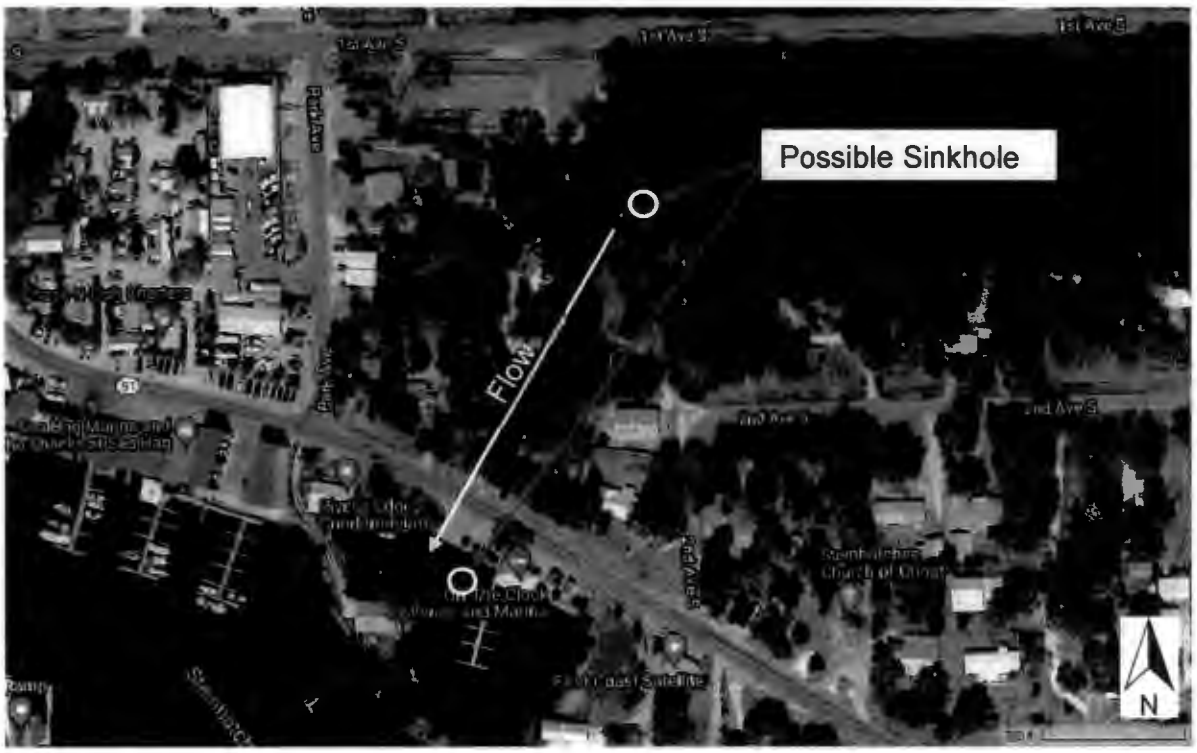

Figure 3-4: Map of Possible Sinkhole Locations

Table 3-3: Summary of Calibration Events

	Locations	Observed WSE* (feet NAVD88)	Model WSE* (feet NAVD88)
2021 Tropical Storm Elsa	13th Street East and Central Avenue	6.8 *(survey of high-water mark)*	7.2 *(max WSE)*
	2nd Avenue South	1.28 *(rough estimate at unknown time)*	1.28 *(at 1200 on 7/7/21)*
	1st Avenue South	2.6 *(rough estimate at unknown time)*	2.5 *(max WSE)*
15-19 August 2019	13th Street East and Central Avenue	Between driveway and the intersection of 13th St E and 1st Ave S	Between driveway and the intersection of 13th St E and 1st Ave S
	Park Avenue	Overtopped	Overtopped

*WSE stands for water-surface elevation

Figure 3-5: Locations of Calibration Points

During the calibration phase, it was determined that a 10-foot-diameter sinkhole was the best representation of observed conditions. Additionally, the model results reasonably

represent observed conditions at each of the calibration points. At the time the survey point was taken on 13th Street East and Central Avenue, the NFS had brought in an 850-gpm pump to pump out the water in that area left from Tropical Storm Elsa. Knowing this, the model results showing slightly higher values in this area had been expected. All other calibration points were within 0.1 foot of observed conditions.

The Taylor County (Steinhatchee) model is highly sensitive to sinkhole size. South of 1st Avenue South, the maximum water-surface elevation (WSE) rises by approximately 1.5 feet if the sinkhole diameter is half the calibrated value. In the design phase, more robust data collection (especially around the possible sinkhole) and modeling efforts are needed to achieve better calibration, along with a statistical analysis of the calibration; unfortunately, these are not in the scope of this FPMS study.

3.5 Results of Alternative Plans

3.5.1 General

To find the best solution to reduce flooding in the Steinhatchee area of the Taylor County watershed, eight management measures were evaluated, including the following features, either separately or combined into separate alternatives. Additionally, snagging and clearing was assumed for all channels and culverts.

- Existing channel expansion
- Culvert expansion at 1st Avenue South
- Culvert lowering and expansion at 2nd Avenue South
- Culvert addition at 7th Street East
- Culvert addition at 13th Street East coupled with culvert addition along Central Avenue
- Culvert addition at 13th Street East coupled with pump addition along Central Avenue
- The regrading and raising of 13th Street East and Central Avenue to an elevation that prevents overtopping at 2% AEP storm
- Culvert expansion at both 4th Street East and Allen Lane

Figure 3-6 shows how these management measures were combined into alternatives. The figure is color coded based on the area of the feature within Taylor County. The blue color signifies the western area near 1st Avenue South, the red color signifies the eastern area near the intersection of 13th Street East and Central Avenue, and the purple color signifies the combination of both areas. The alternatives combine and gain complexity as you move further to the right of the figure (i.e., Alternative 10 is a combination of Alternatives 1, 4, 5, and 6).

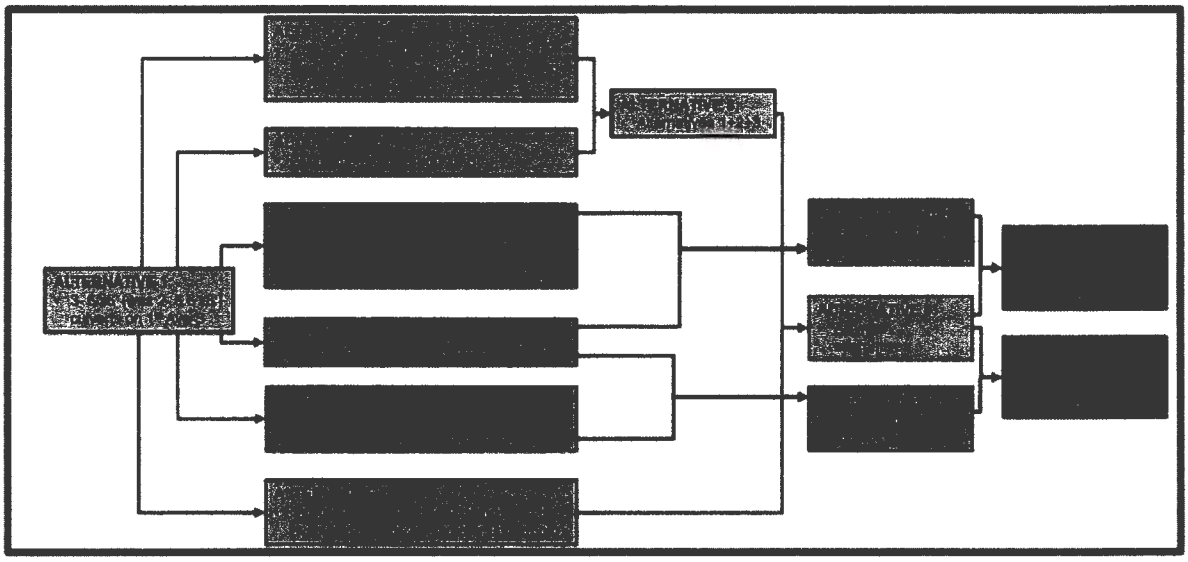

Figure 3-6: Taylor County Alternatives Flow Chart

The alternatives were evaluated comparing the existing condition (Ex) with the proposed condition (Pr). Each alternative was evaluated under 1%, 2%, 4%, and 10%, 24-hr AEP storms. The hydraulic modeling results were evaluated to determine impacts to the maximum WSE within the project area. Special note was taken in this report for the 2%, 24-hr AEP storm because of the county's responsibility to protect the project area under this condition.

3.5.2 Alternative 1: Culvert Expansion at 1st Avenue South

At the onset of this study, the NFS had plans to replace and enlarge the existing 6.6-foot x 8-foot double-barrel box culvert under 1st Avenue South. This would provide more capacity. Allowing water from the upstream end to drain faster and potentially reduce the flooding. For this alternative, the existing culvert was replaced with a 6-foot x 6-foot triple-barrel box culvert. This size was chosen and included with the other alternatives because of the NFS's plans to move forward with construction of this culvert. The configuration of the features can be found in Figure 3-7.

The modeling results show that the maximum WSE is only reduced by 0.10 feet during the 2%, 24-hr AEP storm condition upstream of the proposed culvert.

Table 3-4 presents all storm events modeled. Figure 3-7 provides a difference map of the maximum WSE of the proposed condition (WSE_{Pr}) minus existing condition (WSE_{Ex}) under the 2%, 24-hr AEP storm. Additionally, Figure 3-8 shows the existing versus proposed flood extent maps.

It should be noted that a 6.6-foot x 8-foot triple-barrel box culvert with an invert lowered from -2.9 feet to -4.4 feet was also modeled with similar results. This is likely due to the strong tidal influence on this system. The sinkhole downstream of the culvert connects the area directly to a tidally influences marina and therefore limits the maximum flow allowed through the culvert.

Table 3-4: Alternative 1: Maximum WSE Upstream (US) and Downstream (DS) of Culvert under 1st Avenue South

		Existing		Proposed		$WSE_{Pr} - WSE_{Ex}$
		Max WSE US (ft)	Max WSE DS (ft)	Max WSE US (ft)	Max WSE DS (ft)	Max WSE US (ft)
1st Avenue South	**1%**, 24-hr AEP storm	2.32	2.10	2.20	2.01	-0.12
	2%, 24-hr AEP storm	2.04	1.91	1.94	1.85	-0.10
	4%, 24-hr AEP storm	1.84	1.78	1.80	1.75	-0.04
	10%, 24-hr AEP storm	1.70	1.69	1.69	1.68	-0.01

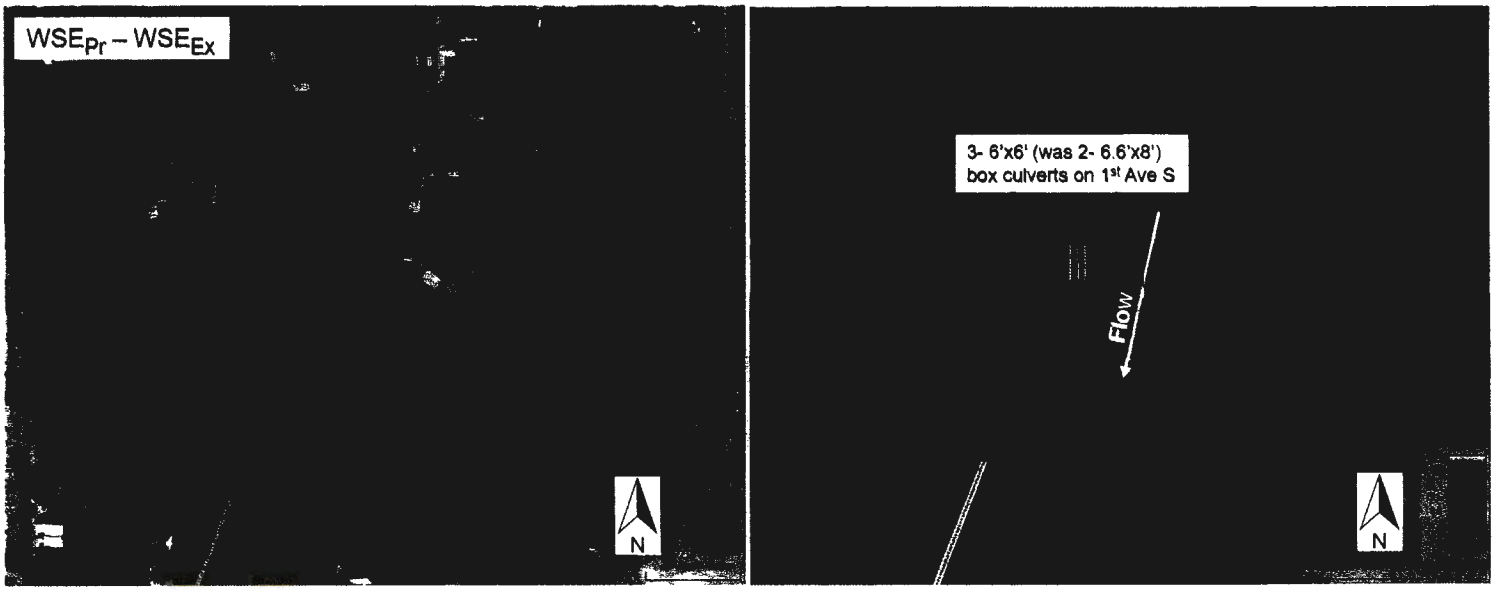

Figure 3-7: Alternative 1: Maximum WSE of Proposed Minus Existing Conditions under a 2%, 24-hr AEP Storm Event (left) The Configuration and Terrain of Proposed Condition (right)

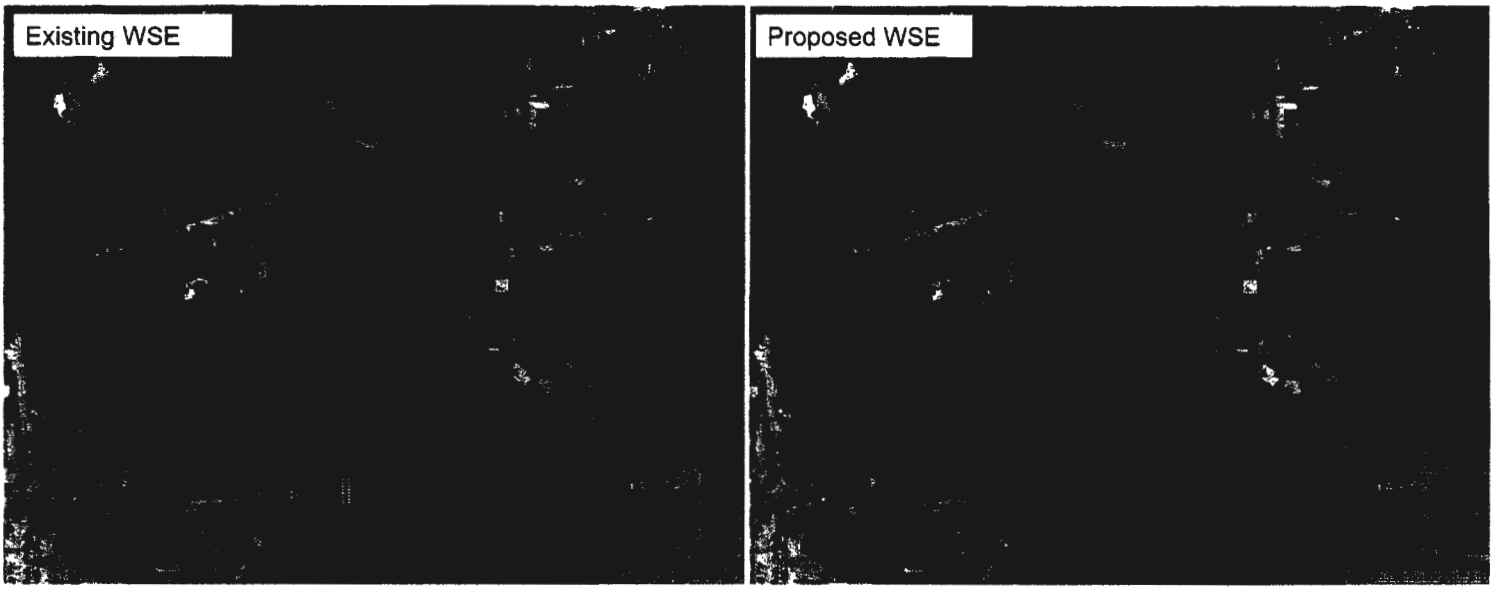

Figure 3-8: Alternative 1: Maximum WSE of Existing Conditions (left) and Proposed (right) under a 2%, 24-hr AEP Storm Event A Negligible Difference can be observed between the Two Graphs

3.5.3 Alternative 2: Culvert Lowering and Expansion at 2nd Avenue South

During the site visit, the PDT noticed that water pooled upstream of the culvert under 2nd Avenue South, so the PDT wanted to evaluate how lowering and expanding the culvert would reduce flooding. For this alternative, the existing single-barrel, 24-inch-diameter culvert was replaced with a single-barrel, 30-inch-diameter culvert at an invert 1.28 feet lower. In addition, the two existing channels upstream of 2nd Ave S are widened to a bottom width of 20 feet. The channel downstream of 7th St E extends 450ft and the one downstream of 1st Ave S extends 600ft. The configuration of the features can be found in Figure 3-9.

The modeling results show that the maximum WSE is reduced by 1.03 feet during the 2%, 24-hr AEP storm upstream of the proposed culvert. Table 3-5 presents the remainder of the storm events modeled. Figure 3-9 provides a difference map of the maximum WSE_{Pr} and WSE_{Ex} under the 2%, 24-hr AEP storm. Additionally, Figure 3-10 shows the existing versus proposed flood extent maps.

Table 3-5: Alternative 2: Maximum WSE Upstream (US) and Downstream (DS) of Culvert Locations

		Existing		Proposed		$WSE_{Pr} - WSE_{Ex}$
		Max WSE US (ft)	Max WSE DS (ft)	Max WSE US (ft)	Max WSE DS (ft)	Max WSE US (ft)
1st Avenue South	**1%**, 24-hr AEP storm	2.32	2.10	2.20	2.01	-0.12
	2%, 24-hr AEP storm	2.04	1.91	1.94	1.85	-0.10
	4%, 24-hr AEP storm	1.84	1.78	1.80	1.75	-0.04
	10%, 24-hr AEP storm	1.70	1.69	1.69	1.68	-0.01
2nd Avenue South	**1%**, 24-hr AEP storm	3.01	1.68	1.77	1.68	-1.24
	2%, 24-hr AEP storm	2.77	1.67	1.74	1.67	-1.03
	4%, 24-hr AEP storm	2.48	1.66	1.72	1.66	-0.76
	10%, 24-hr AEP storm	2.02	1.65	1.69	1.66	-0.33

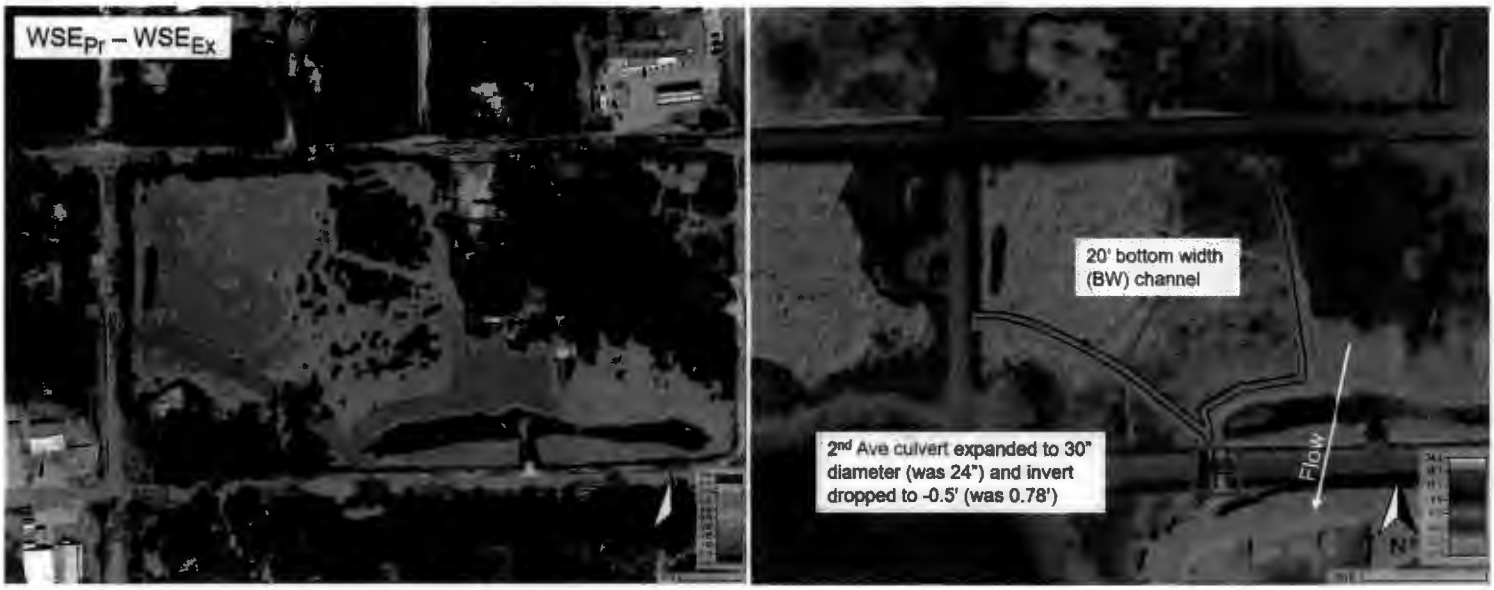

Figure 3-9: Alternative 2: Maximum WSE of Proposed minus Existing Conditions under a 2%, 24-hr AEP Storm Event (left) The Configuration and Terrain of Proposed Condition (right)

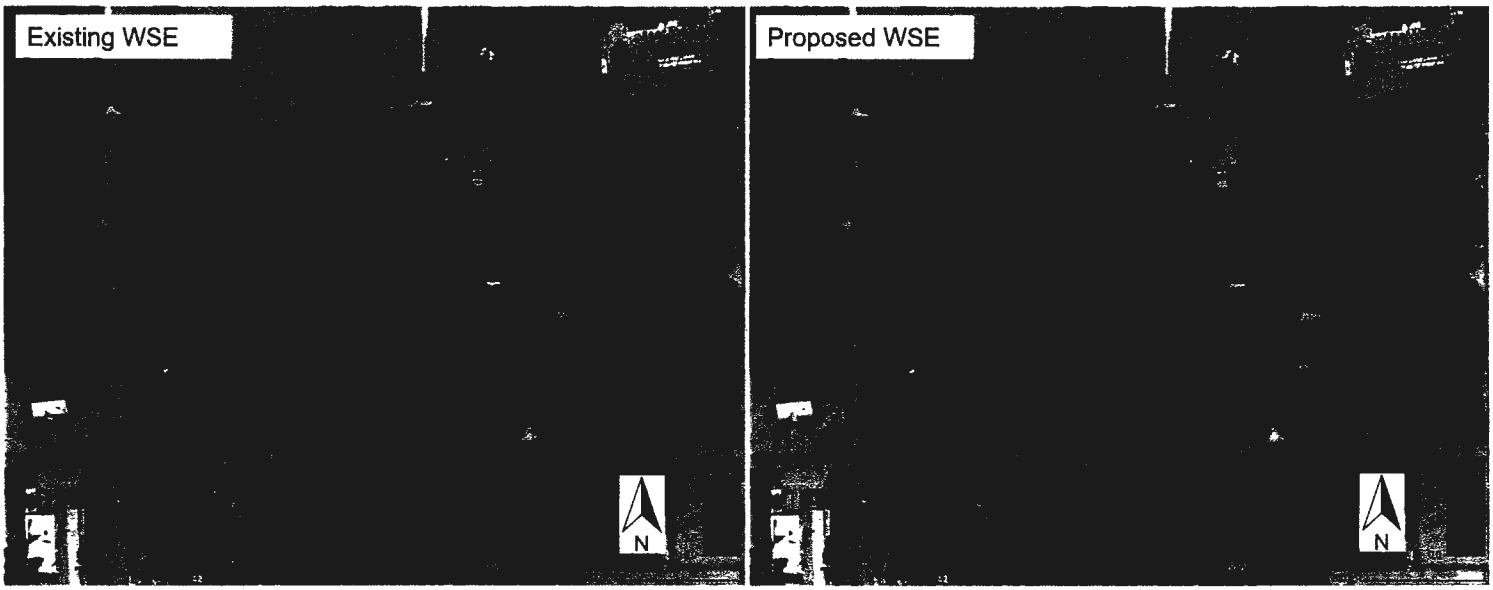

Figure 3-10: Alternative 2: Maximum WSE of Existing Conditions (left) and Proposed (right) under a 2%, 24-hr AEP Storm Event

3.5.4 Alternative 3: Culvert Addition at 7th Street East

For this alternative, a single-barrel 24-inch-diameter culvert was added under 7th Street East to allow the water to flow from west to east and exit to the river via the 2nd Avenue South Culvert. Along with the culvert addition, two existing channels upstream of 2nd Ave S are widened to a bottom width of 20 feet was added to give a southward preferential flow path. The channel crossing 7th St E extends 700ft and the one downstream of 1st Ave S extends 600ft. The configuration of the features can be found in Figure 3-11.

The modeling results show that the addition of the culvert under 7th Avenue East does not affect the maximum WSE during the 2%, 24-hr AEP storm. Like Alternative 1, this is likely due to the strong tidal influence on the system. With the large size of the sinkhole in the calibrated model, the water in the area upstream of 7th Street East is forced south through the sinkhole connection to match the tide and overpowers the culvert. Table 3-6 presents the remainder of the storm events modeled. Figure 3-11 provides a difference map of the maximum WSE_{Pr} and WSE_{Ex} during the 2%, 24-hr AEP storm along with the configuration of this alternative. Additionally, Figure 3-12 shows the existing versus proposed flood extent maps.

It should also be noted that the flood extent map for the proposed condition of this alternative (Figure 3-12) and the previous (Figure 3-10) look very similar north of 2nd Avenue South. This implies that the channelization of the area may have the most significant impact to flood improvement.

Table 3-6: Alternative 3: Maximum WSE Upstream (US) and Downstream (DS) of Culvert Locations

		Existing		Proposed		$WSE_{Pr} - WSE_{Ex}$
		Max WSE US (ft)	Max WSE DS (ft)	Max WSE US (ft)	Max WSE DS (ft)	Max WSE US (ft)
1st Avenue South	1%, 24-hr AEP storm	2.32	2.10	2.19	2.00	-0.13
	2%, 24-hr AEP storm	2.04	1.91	1.94	1.85	-0.10
	4%, 24-hr AEP storm	1.84	1.78	1.80	1.74	-0.04
	10%, 24-hr AEP storm	1.70	1.69	1.69	1.68	-0.01
7th Street East	1%, 24-hr AEP storm	1.93	3.13	1.92	1.82	-0.01
	2%, 24-hr AEP storm	1.80	3.03	1.80	1.76	0.00
	4%, 24-hr AEP storm	1.72	2.97	1.72	1.72	0.00
	10%, 24-hr AEP storm	1.67	2.88	1.68	1.69	0.01

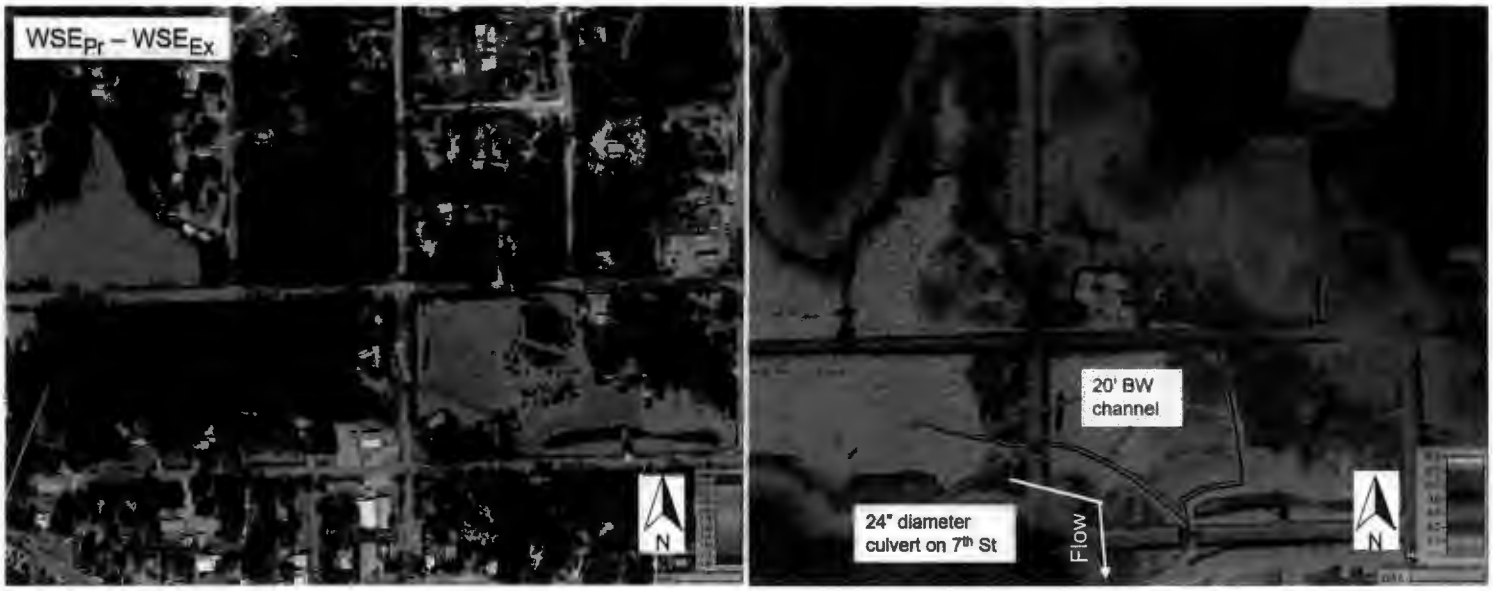

Figure 3-11: Alternative 3: Maximum WSE of Proposed minus Existing Conditions under a 2%, 24-hr AEP Storm Event (left) The Configuration and Terrain of Proposed Condition (right)

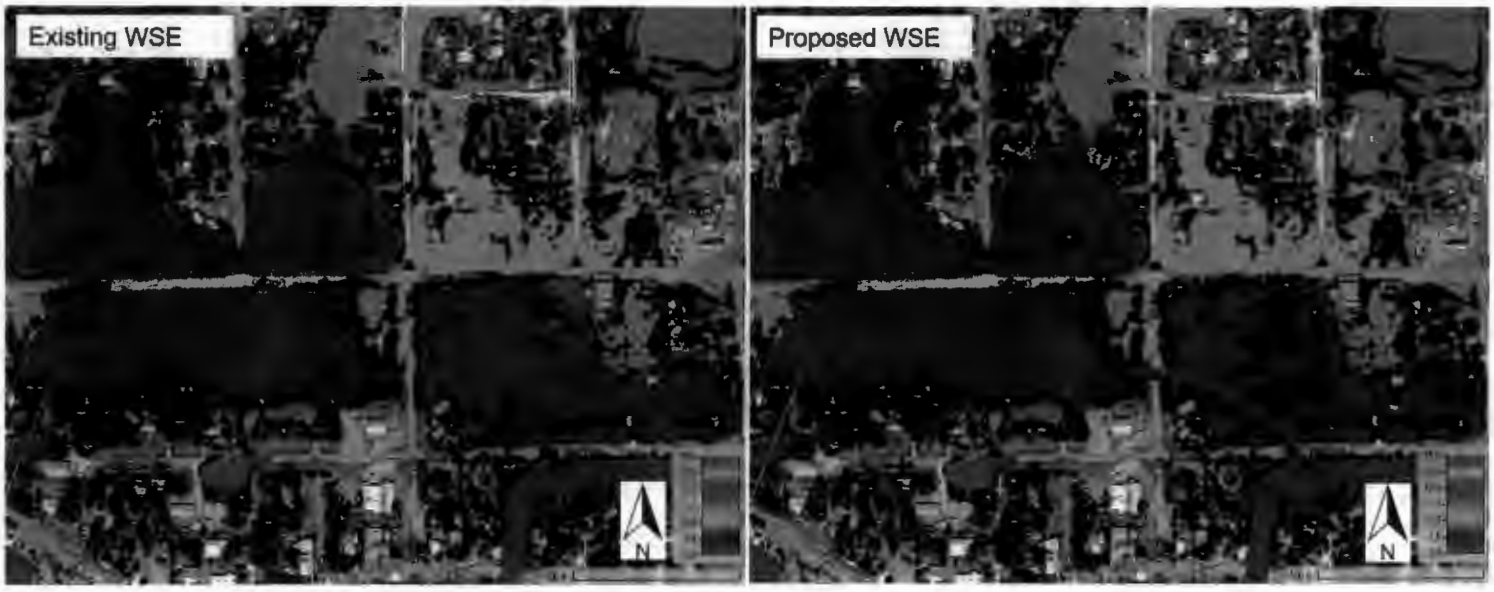

Figure 3-12: Alternative 3: Maximum WSE of Existing Conditions (left) and Proposed (right) under a 2%, 24-hr AEP Storm Event

3.5.5 Alternative 4: Culvert Addition at 13th Street East Coupled with Culvert Addition Along Central Avenue

This area of Steinhatchee initially had no way to route water from the system outside of natural processes. To get water out of this area after large storm events, the NFS brought in pumps to move the water out. For this alternative, a double-barrel, 36-inch-diameter culvert was added under 13th Street East and an 1,870-foot-long, single-barrel, 42-inch-diameter culvert that discharges into the river was added along Central Avenue. In addition, the existing channel upstream of the purposed 42-inch-diameter culvert is widened to a bottom width of 20 feet for 340 feet to connect the two culvert systems. The configuration of the features can be found in Figure 3-13.

The modeling results show that the maximum WSE is reduced by 2.11 feet during the 2%, 24-hr AEP storm upstream of the proposed culvert on Central Avenue. Table 3-7 presents the remainder of the storm events modeled. Figure 3-13 provides a difference map of the maximum WSE_{Pr} and WSE_{Ex} during the 2%, 24-hr AEP storm. Additionally, Figure 3-14 shows the existing versus proposed flood extent maps.

Table 3-7: Alternative 4: Maximum WSE Upstream (US) and Downstream (DS) of Culvert Locations

		Existing		Proposed		WSE_{Pr} - WSE_{Ex}
		Max WSE US (ft)	Max WSE DS (ft)	Max WSE US (ft)	Max WSE DS (ft)	Max WSE US (ft)
1st Avenue South	**1%**, 24-hr AEP storm	2.32	2.10	2.19	2.00	-0.13
	2%, 24-hr AEP storm	2.04	1.91	1.94	1.85	-0.10
	4%, 24-hr AEP storm	1.84	1.78	1.80	1.74	-0.04
	10%, 24-hr AEP storm	1.70	1.69	1.69	1.68	-0.01
13th Street East	**1%**, 24-hr AEP storm	1.93	3.13	1.92	1.82	-0.01
	2%, 24-hr AEP storm	1.80	3.03	1.80	1.76	0.00
	4%, 24-hr AEP storm	1.72	2.97	1.72	1.72	0.00
	10%, 24-hr AEP storm	1.67	2.88	1.68	1.69	0.01
Central Avenue (culvert)	**1%**, 24-hr AEP storm	9.91	1.65	6.79	1.65	-3.12
	2%, 24-hr AEP storm	8.56	1.65	6.45	1.65	-2.11
	4%, 24-hr AEP storm	7.81	1.65	6.13	1.65	-1.68
	10%, 24-hr AEP storm	7.22	1.65	5.77	1.65	-1.45

Figure 3-13: Alternative 4: Maximum WSE of Proposed minus Existing Conditions under 2%, 24-hr AEP Storm Event (left) The Configuration and Terrain of Proposed Condition (right)

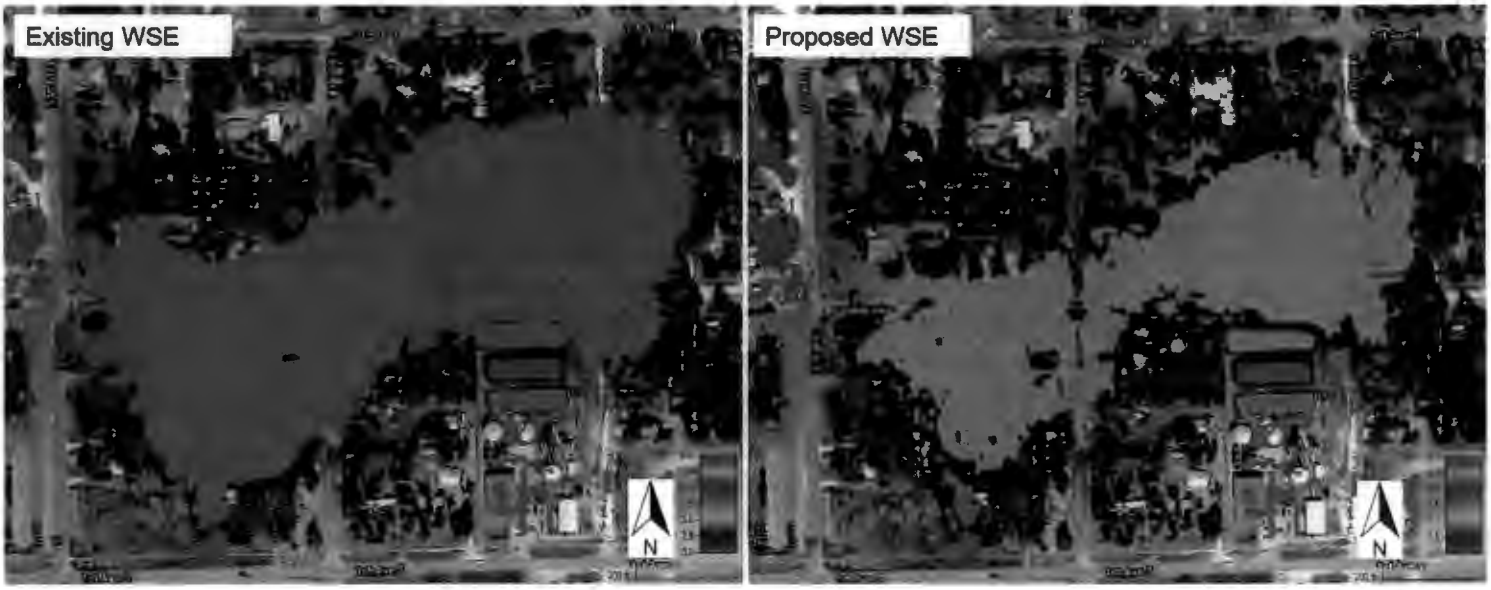

Figure 3-14: Alternative 4: Maximum WSE of Existing Conditions (left) and Proposed (right) under a 2%, 24-hr AEP Storm Event

3.5.6 Alternative 5: Culvert Addition at 13st Street East Coupled with Pump Addition Along Central Avenue

This alternative is very similar to Alternative 4 with the only exception being that a pump is in place of the culvert along Central Avenue. For Alternative 5, a double-barrel, 36-inch-diameter culvert was added under 13th Street East and a pump was added on the west end of Central Avenue that discharges into the river. In addition, the existing channel upstream of the purposed pump is widened to a bottom width of 20 feet for 340 feet to connect the pump and culvert systems. The configuration of the features can be found in Figure 3-15.

To determine the flow needed in the pump, many different flows were modeled until a flow was found that keeps 13th Street East from overtopping under the 2%, 24-hr AEP storm event. 13th Street East overtops at 6.63 feet. The pump was set up to turn on and effectively pump 17.5 cfs into the river once the WSE reaches 5.50 feet and turn off when it reaches 4.30 feet (6 inches above the ground elevation).

The modeling results show that the maximum WSE lowers by 2.00 feet under the 2%, 24-hr AEP storm upstream of the proposed pump on Central Avenue. Table 3-8 presents the remainder of the storm events modeled. Figure 3-15 provides a difference map of the maximum WSE_{Pr} and WSE_{Ex} under the 2%, 24-hr AEP storm. Additionally, Figure 3-16 shows the existing versus proposed flood extent maps.

Table 3-8: Alternative 5: Maximum WSE Upstream (US) and Downstream (DS) of Culvert/Pump Locations

		Existing		Proposed		$WSE_{Pr} - WSE_{Ex}$
		Max WSE US (ft)	Max WSE DS (ft)	Max WSE US (ft)	Max WSE DS (ft)	Max WSE US (ft)
1st Avenue South	**1%**, 24-hr AEP storm	2.32	2.10	2.20	2.01	-0.12
	2%, 24-hr AEP storm	2.04	1.91	1.94	1.85	-0.10
	4%, 24-hr AEP storm	1.84	1.78	1.80	1.75	-0.04
	10%, 24-hr AEP storm	1.70	1.69	1.69	1.68	-0.01
13th Street East	**1%**, 24-hr AEP storm	9.91	9.91	7.50	7.50	-2.41
	2%, 24-hr AEP storm	8.56	8.56	6.57	6.56	-1.99
	4%, 24-hr AEP storm	7.81	7.81	5.92	5.91	-1.89
	10%, 24-hr AEP storm	7.22	7.22	5.66	5.66	-1.56
Central Avenue (pump)	**1%**, 24-hr AEP storm	9.91	1.65	7.50	1.65	-2.41
	2%, 24-hr AEP storm	8.56	1.65	6.56	1.65	-2.00
	4%, 24-hr AEP storm	7.81	1.65	5.91	1.65	-1.90
	10%, 24-hr AEP storm	7.22	1.65	5.66	1.65	-1.56

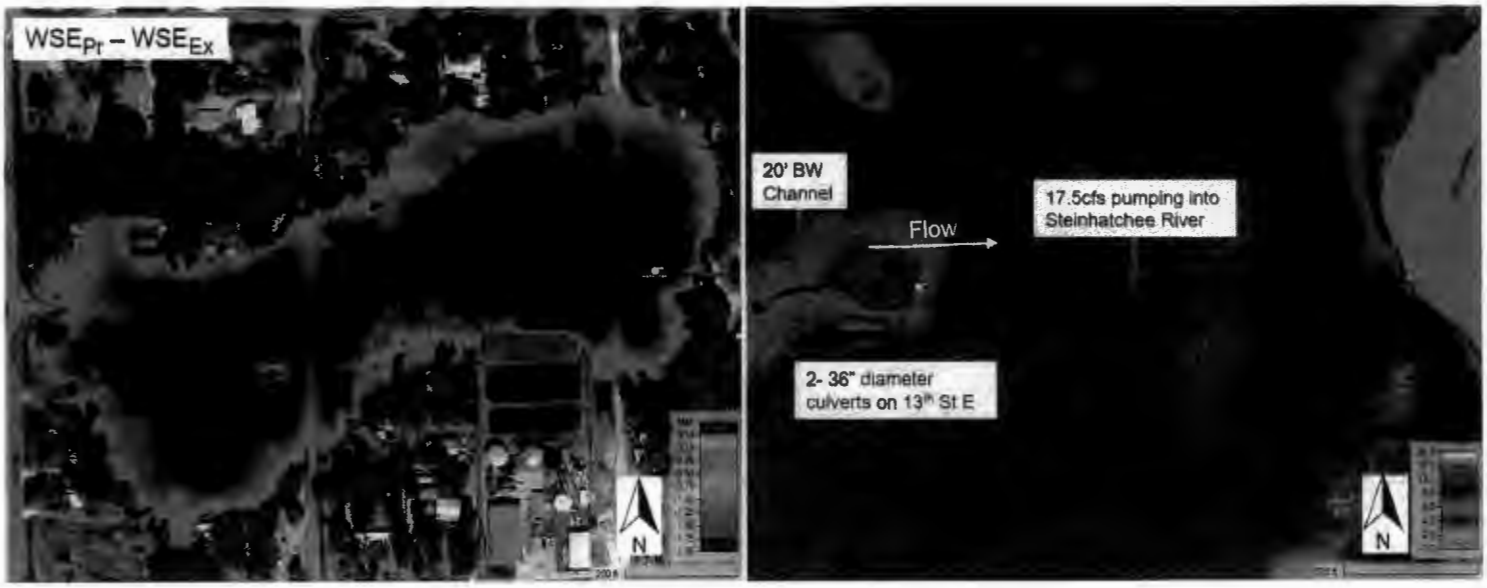

Figure 3-15: Alternative 5: Maximum WSE of Proposed minus Existing Conditions under 2%, 24-hr AEP Storm Event (left) The Configuration and Terrain of Proposed Condition (right)

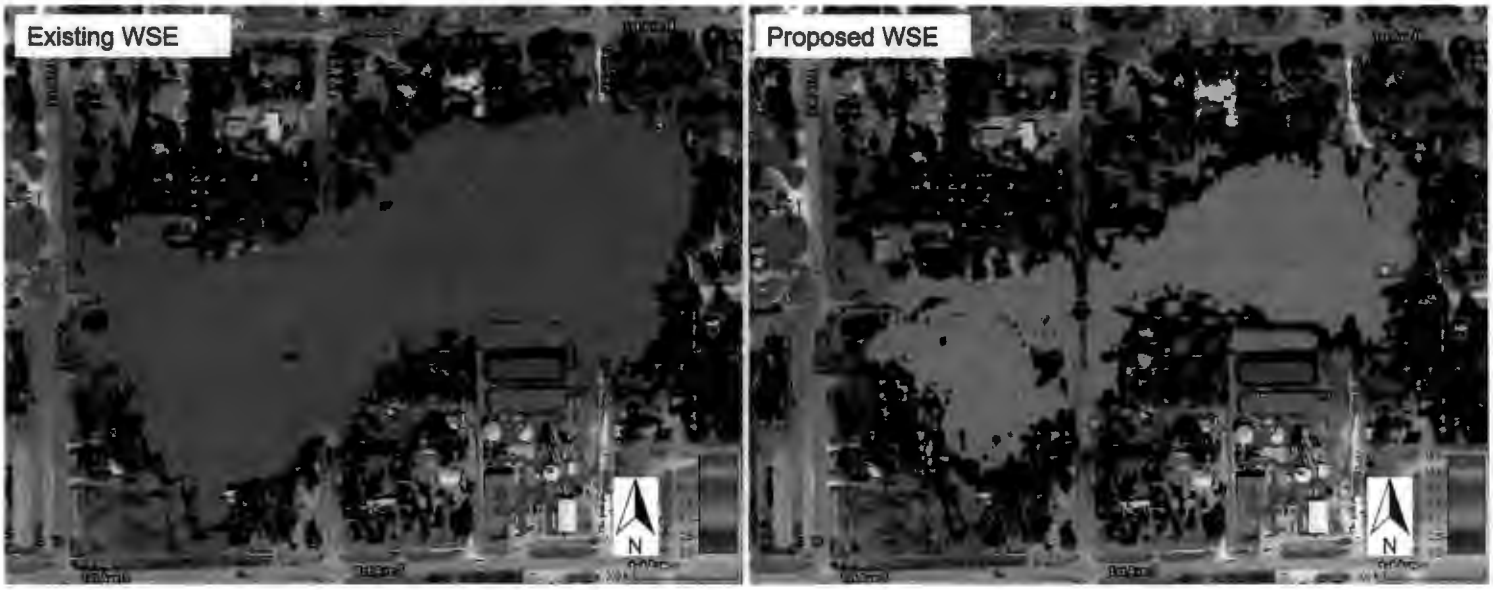

Figure 3-16: Alternative 5: Maximum WSE of Existing Conditions (left) and Proposed (right) under a 2%, 24-hr AEP Storm Event

3.5.7 Alternative 6: Regrade and Raise 13th Street East and Central Avenue

The purpose of this alternative was to determine what elevation 13th Street East and Central Avenue should be raised to, in order to avoid overtopping under the 2%, 24-hr AEP storm event and allow residents to use the roads for evacuation purposes. Based on modeling results, The PDT chose an Elevation of 9.0 feet. Also, the PDT wanted to evaluate whether raising the roads would impact adjacent areas.

The modeling results show that under the 2%, 24-hr AEP storm, the maximum WSE increases by 0.46 feet northwest of the 13th Street East and Central Avenue intersection, 0.37 feet southwest of the intersection, and decreases by 0.12 feet on the western end of Central Avenue. Table 3-9 provides a table of the remainder of the storm events modeled. Figure 3-17 provides a difference map of the maximum WSE_{Pr} and WSE_{Ex} under the 2%, 24-hr AEP storm. Additionally, Figure 3-18 has the existing versus proposed flood extent maps. These flood extent maps suggest that raising the roads would not cause any adjacent areas to flood under the 2%, 24-hr AEP storm event.

Table 3-9: Alternative 6: Maximum WSE Upstream (US) and Downstream (DS) of Culvert Locations

		Existing		Proposed		$WSE_P - WSE_E$
		Max WSE US (ft)	Max WSE DS (ft)	Max WSE US (ft)	Max WSE DS (ft)	Max WSE US (ft)
1st Avenue South	1%, 24-hr AEP storm	2.32	2.10	2.20	2.01	-0.12
	2%, 24-hr AEP storm	2.04	1.91	1.94	1.85	-0.10
	4%, 24-hr AEP storm	1.84	1.78	1.80	1.75	-0.04
	10%, 24-hr AEP storm	1.70	1.69	1.69	1.68	-0.01
13th Street East (North of Central)	1%, 24-hr AEP storm	9.91	9.91	9.98	9.88	0.07
	2%, 24-hr AEP storm	8.56	8.56	9.02	8.44	0.46
	4%, 24-hr AEP storm	7.81	7.81	9.01	7.71	1.20
	10%, 24-hr AEP storm	7.22	7.22	9.01	7.00	1.79
13th Street East (South of Central)	1%, 24-hr AEP storm	9.91	9.91	9.98	9.98	0.07
	2%, 24-hr AEP storm	8.56	8.56	8.93	8.44	0.37
	4%, 24-hr AEP storm	7.81	7.81	7.77	7.71	-0.04
	10%, 24-hr AEP storm	7.22	7.22	7.12	7.00	-0.10
Central Avenue	1%, 24-hr AEP storm	9.91	1.65	9.98	1.65	0.07
	2%, 24-hr AEP storm	8.56	1.65	8.44	1.65	-0.12
	4%, 24-hr AEP storm	7.81	1.65	7.71	1.65	-0.10
	10%, 24-hr AEP storm	7.22	1.65	7.00	1.65	-0.22

Figure 3-17: Alternative 6: Maximum WSE of Proposed minus Existing Conditions under 2%, 24-hr AEP Storm Event (left) The Configuration and Terrain of Proposed Condition (right)

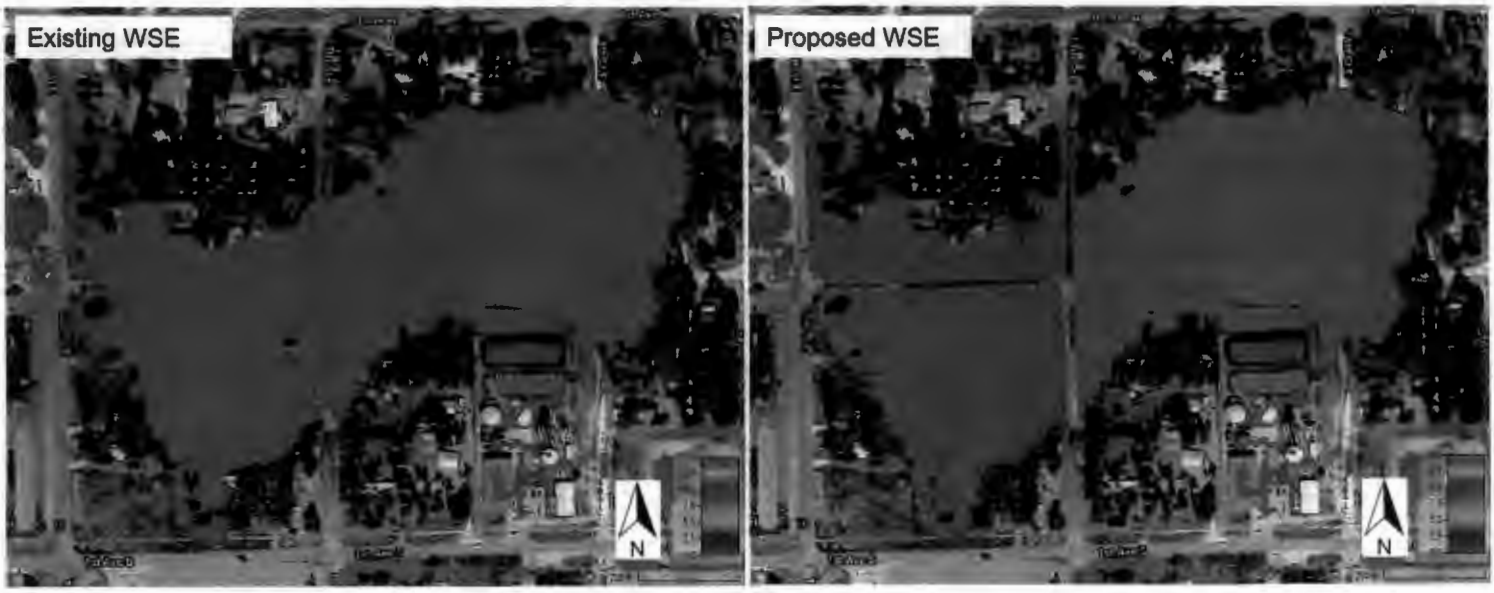

Figure 3-18: Alternative 6: Maximum WSE of Existing Conditions (left) and Proposed (right) under a 2%, 24-hr AEP Storm Event

3.5.8 Alternative 7: Culvert Expansion at both 4th Street East and Allen Lane

After evaluating the expansion of the 1st Avenue South Culvert from Alternative 1 and determining that the culvert was not operating at full capacity, the PDT decided to investigate this culvert system further upstream. For Alternative 7, a single-barrel, 3-foot x 20-foot box culvert was added under both 4th Street East and Allen Lane. A 40-foot bottom width channel was also added to give a preferential flow path toward 1st Avenue South. The culvert dimensions were chosen due to the county's funding limitation and the space currently available under the road (only 3 feet of clearance available under road). Funding regulations state that anything spanning more than 20 feet will require a different stream of funding as it would then fall under the bridge designation. Based on modeling results, A channel expansion to 40-foot bottom width extending 1500 feet was chosen in addition to the culvert to maximize flood improvement. The configuration of the features can be found in Figure 3-19.

The modeling results show that the maximum WSE lowers by 1.44 feet under the 2%, 24-hr AEP storm upstream of the proposed culvert under 4th Street East. Table 3-10 provides the remainder of the storm events modeled. Figure 3-19 presents a difference map of the maximum WSE_{Pr} and WSE_{Ex} under the 2%, 24-hr AEP storm. Additionally, Figure 3-20 shows the existing versus proposed flood extent maps.

It should also be noted that the modeling is showing a minimal increase in WSE directly upstream of the culvert under 1st Avenue South in comparison with Alternative 1. This further enforces the notion that the 1st Avenue South Culvert is heavily tailwater driven. Because of the sinkhole connection to the tidally influenced marina and the tidal boundary condition being set to MHHW, this culvert's effectiveness is limited by the tailwater condition. The culvert has the capacity to push more water through it from the upstream end. However, since the sinkhole is effectively connecting the downstream end of the culvert to tide, the tailwater stage is limited to the current tidal elevation.

Table 3-10: Alternative 7: Maximum WSE Upstream (US) and Downstream (DS) of Culvert Locations

		Existing		Proposed		$WSE_{Pr} - WSE_{Ex}$
		Max WSE US (ft)	Max WSE DS (ft)	Max WSE US (ft)	Max WSE DS (ft)	Max WSE US (ft)
1st Avenue South	1%, 24-hr AEP storm	2.32	2.10	2.20	2.01	-0.12
	2%, 24-hr AEP storm	2.04	1.91	1.96	1.86	-0.08
	4%, 24-hr AEP storm	1.84	1.78	1.82	1.76	-0.02
	10%, 24-hr AEP storm	1.70	1.69	1.72	1.70	0.02
4th Street East	1%, 24-hr AEP storm	4.49	4.45	3.32	3.08	-1.17
	2%, 24-hr AEP storm	4.36	4.33	2.92	2.72	-1.44
	4%, 24-hr AEP storm	4.21	4.19	2.48	2.38	-1.73
	10%, 24-hr AEP storm	3.87	3.82	2.01	1.95	-1.86
Allen Lane	1%, 24-hr AEP storm	4.45	3.96	3.02	2.72	-1.43
	2%, 24-hr AEP storm	4.33	3.70	2.67	2.43	-1.66
	4%, 24-hr AEP storm	4.18	3.38	2.34	2.17	-1.84
	10%, 24-hr AEP storm	3.82	2.79	1.92	1.87	-1.90

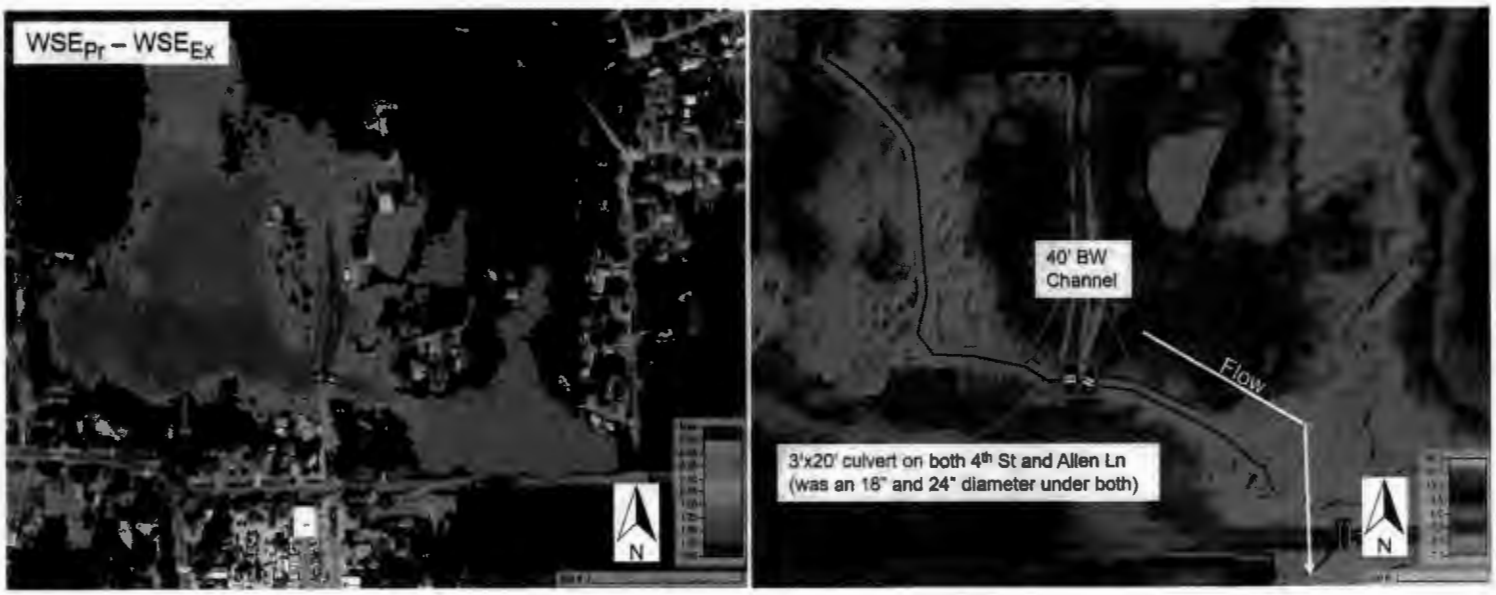

Figure 3-19: Alternative 7: Maximum WSE of Proposed minus Existing Conditions under 2%, 24-hr AEP Storm Event (left) The Configuration and Terrain of Proposed Condition (right)

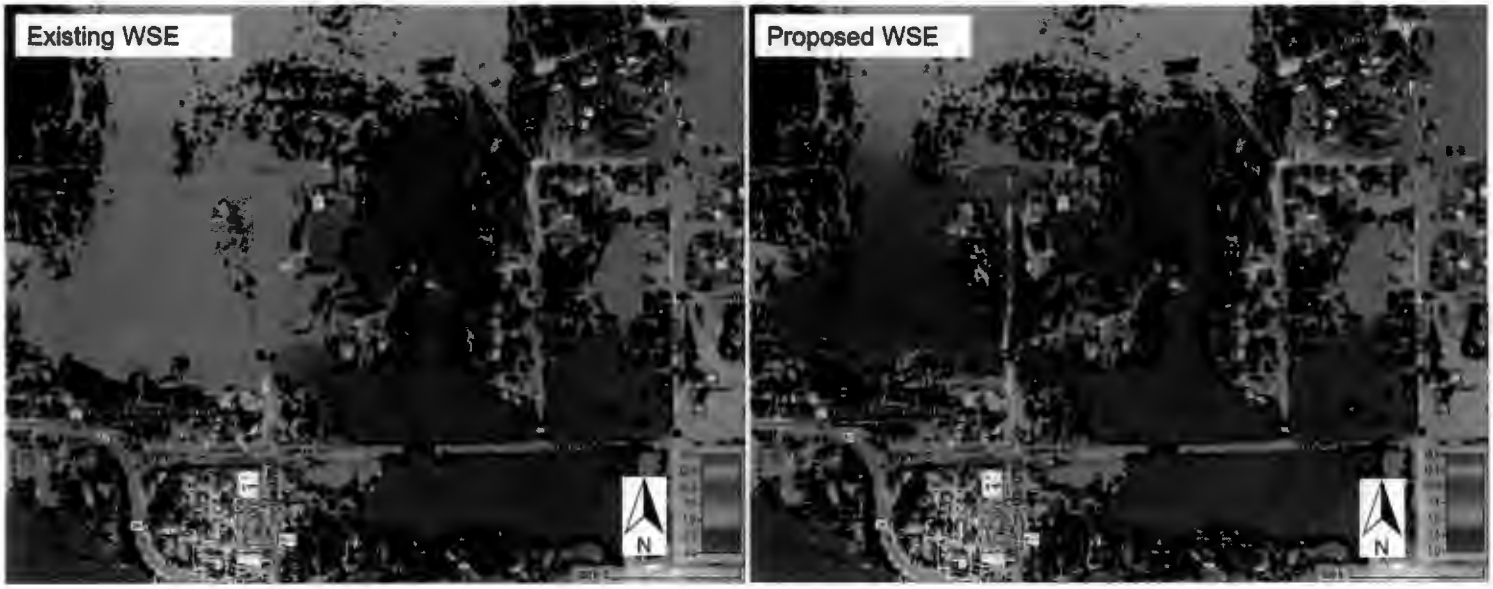

Figure 3-20: Alternative 7: Maximum WSE of Existing Conditions (left) and Proposed (right) under a 2%, 24-hr AEP Storm Event

3.5.9 Alternative 8: 1st Avenue South, 2nd Avenue South, and 7th Street East Improvements (Alternatives 1, 2, and 3)

From this alternative on, the alternatives will combine with one another to determine their combined effects on flooding. This alternative is a combination of the first three alternatives and was specifically chosen because of the NFS's interest in having these improvements done in the future. For this alternative, the existing 6.6-foot x 8-foot double-barrel box culvert under 1st Avenue South was replaced with a 6-foot x 6-foot triple-barrel box culvert, the existing single-barrel, 24-inch-diameter culvert under 2nd Avenue South was replaced with a single-barrel, 30-inch-diameter culvert at an invert 1.28 feet lower, and a 24-inch-diameter culvert was added under 7th Street East. The same 20-foot bottom width channel expansion from Alternative 3 was also added to give a southward preferential flow path. The configuration of the features can be found in Figure 3-21.

The modeling results show that the maximum WSE is reduced by 1.04 feet during the 2%, 24-hr AEP storm upstream of the culvert on 2nd Avenue South. Table 3-11 provides the remainder of the storm events modeled. Figure 3-21 presents a difference map of the maximum WSE_{Pr} and WSE_{Ex} under the 2%, 24-hr AEP storm. Additionally, Figure 3-22 shows the existing versus proposed flood extent maps.

The modeling results show a strong similarity to both Alternative 2 and Alternative 3. Based on this information, it appears the channelization of the area is the most impactful factor within the modeling constraints.

Table 3-11: Alternative 8: Maximum WSE Upstream (US) and Downstream (DS) of Culvert Locations

		Existing		Proposed		$WSE_{Pr} - WSE_{Ex}$
		Max WSE US (ft)	Max WSE DS (ft)	Max WSE US (ft)	Max WSE DS (ft)	Max WSE US (ft)
1st Avenue South	1%, 24-hr AEP storm	2.32	2.10	2.19	2.00	-0.13
	2%, 24-hr AEP storm	2.04	1.91	1.94	1.85	-0.10
	4%, 24-hr AEP storm	1.84	1.78	1.80	1.74	-0.04
	10%, 24-hr AEP storm	1.70	1.69	1.69	1.68	-0.01
2nd Avenue South	1%, 24-hr AEP storm	3.01	1.68	1.79	1.68	-1.22
	2%, 24-hr AEP storm	2.77	1.67	1.73	1.67	-1.04
	4%, 24-hr AEP storm	2.48	1.66	1.71	1.66	-0.77
	10%, 24-hr AEP storm	2.02	1.65	1.68	1.65	-0.34
7th Street East	1%, 24-hr AEP storm	1.93	3.13	1.92	1.79	-0.01
	2%, 24-hr AEP storm	1.80	3.03	1.80	1.73	0.00
	4%, 24-hr AEP storm	1.72	2.97	1.72	1.71	0.00
	10%, 24-hr AEP storm	1.67	2.88	1.68	1.68	0.01

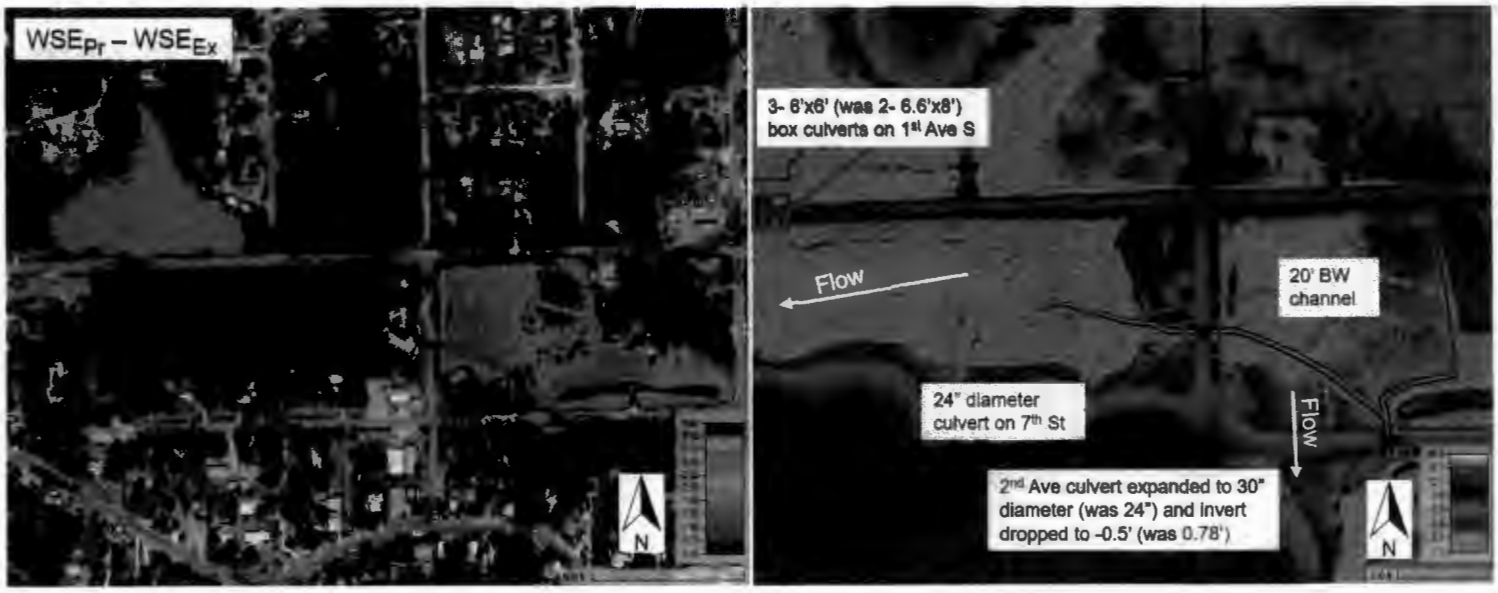

Figure 3-21: Alternative 8: Maximum WSE of Proposed minus Existing Conditions under 2%, 24-hr AEP Storm Event (left) The Configuration and Terrain of Proposed Condition (right)

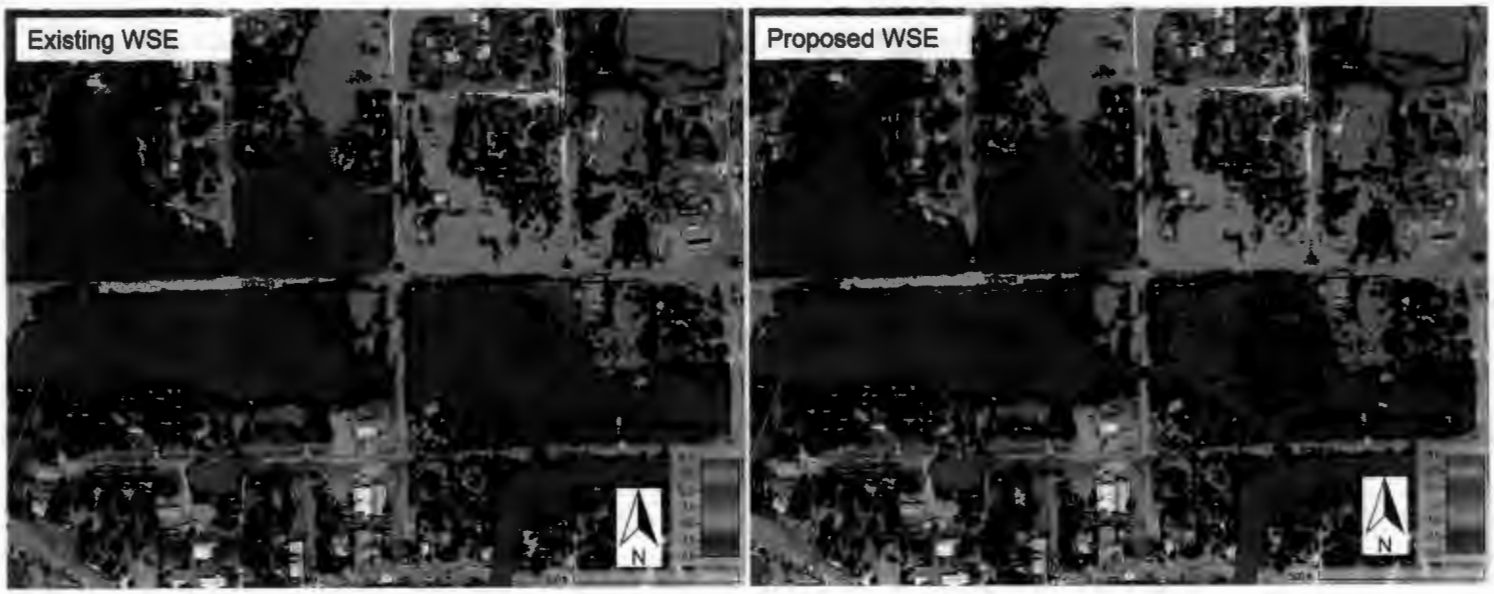

Figure 3-22: Alternative 8: Maximum WSE of Existing Conditions (left) and Proposed (right) under a 2%, 24-hr AEP Storm Event

3.5.10 Alternative 9: All Western Alternatives (Alternatives 7 and 8)

This alternative is a combination of the all the alternatives previously discussed on the west side of Steinhatchee. For this alternative, the existing 6.6-foot x 8-foot double-barrel box culvert under 1st Avenue South was replaced with a 6-foot x 6-foot triple-barrel box culvert, the existing single-barrel 24-inch-diameter culvert under 2nd Avenue South was replaced with a single-barrel 30-inch-diameter culvert at an invert 1.28 feet lower, a 24-inch-diameter culvert was added under 7th Street East, and a single-barrel, 3-foot x 20-foot box culvert was added under both 4th Street East and Allen Lane. The same 20-foot bottom width channel expansion from Alternative 3 and 40-foot bottom width channel expansion from Alternative 7 were added to give a preferential flow path to 1st Avenue South and out of the culvert under 2nd Avenue South. The configuration of the features can be found in Figure 3-23.

The modeling results show that the maximum WSE is reduced by nearly the same amount as Alternatives 7 and 8 at their respective structures. Table 3-12 provides the storm events modeled. Figure 3-23 presents a difference map of the maximum WSE_{Pr} and WSE_{Ex} under the 2%, 24-hr AEP storm. Additionally, Figure 3-24 shows the existing versus proposed flood extent maps.

Table 3-12: Alternative 9: Maximum WSE Upstream (US) and Downstream (DS) of Culvert Locations

		Existing		Proposed		$WSE_{Pr} - WSE_{Ex}$
		Max WSE US (ft)	Max WSE DS (ft)	Max WSE US (ft)	Max WSE DS (ft)	Max WSE US (ft)
1st Avenue South	1%, 24-hr AEP storm	2.32	2.10	2.19	2.00	-0.13
	2%, 24-hr AEP storm	2.04	1.91	1.96	1.86	-0.08
	4%, 24-hr AEP storm	1.84	1.78	1.82	1.76	-0.02
	10%, 24-hr AEP storm	1.70	1.60	1.72	1.70	0.02
2nd Avenue South	1%, 24-hr AEP storm	3.01	1.68	1.79	1.69	-1.22
	2%, 24-hr AEP storm	2.77	1.67	1.74	1.67	-1.03
	4%, 24-hr AEP storm	2.48	1.66	1.71	1.66	-0.77
	10%, 24-hr AEP storm	2.02	1.65	1.69	1.66	-0.33
7th Street East	1%, 24-hr AEP storm	1.93	3.13	1.92	1.80	-0.01
	2%, 24-hr AEP storm	1.80	3.03	1.81	1.75	0.01
	4%, 24-hr AEP storm	1.72	2.97	1.73	1.71	0.01
	10%, 24-hr AEP storm	1.67	2.88	1.69	1.69	0.02
4th Street East	1%, 24-hr AEP storm	4.49	4.45	3.32	3.07	-1.17
	2%, 24-hr AEP storm	4.36	4.33	2.92	2.72	-1.44
	4%, 24-hr AEP storm	4.21	4.19	2.47	2.38	-1.74
	10%, 24-hr AEP storm	3.87	3.82	2.00	1.95	-1.87
Allen Lane	1%, 24-hr AEP storm	4.45	3.96	3.02	2.72	-1.43
	2%, 24-hr AEP storm	4.33	3.70	2.67	2.43	-1.66
	4%, 24-hr AEP storm	4.18	3.38	2.33	2.17	-1.85
	10%, 24-hr AEP storm	3.82	2.79	1.92	1.86	-1.90

Figure 3-23: Alternative 9: Maximum WSE of Proposed minus Existing Conditions under 2%, 24-hr AEP Storm Event (left) The Configuration and Terrain of Proposed Condition (right)

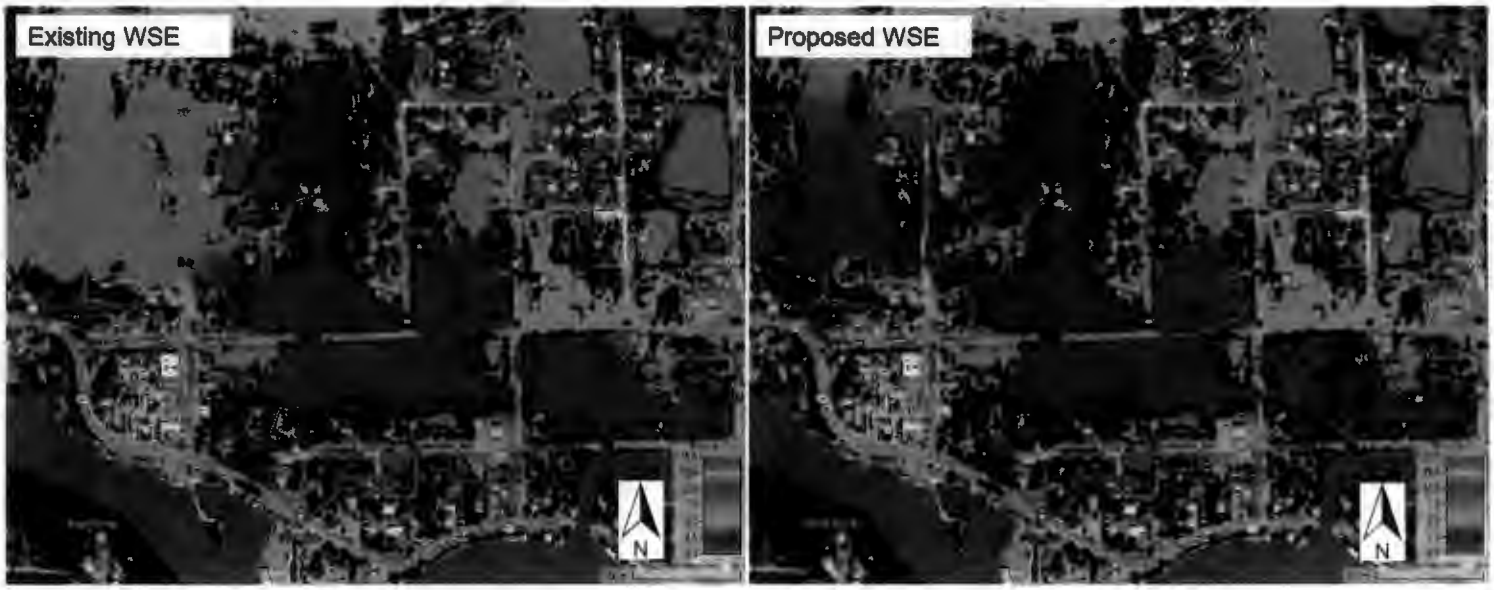

Figure 3-24: Alternative 9: Maximum WSE of Existing Conditions (left) and Proposed (right) under a 2%, 24-hr AEP Storm Event

3.5.11 Alternative 10: Eastern Alternatives [Passive] (Alternatives 1, 4, and 6)

This alternative is a combination of the all the alternatives previously discussed on the east side of Steinhatchee except for the pump. It also includes an extra culvert addition that will be discussed later. For this alternative, a double-barrel, 36-inch-diameter culvert was added south of the 13th Street East and Central Avenue intersection, a single-barrel, 36-inch-diameter culvert was added north of the intersection, and an 1,870-foot-long, single-barrel, 42-inch-diameter culvert that discharges into the river was added along Central Avenue. Additionally, the existing channel upstream of the purposed 42-inch-diameter culvert is widened to a bottom width of 20 feet to connect the two culvert systems, and both 13th Street East and Central Avenue were raised to Elevation 9.0 ft as discussed in Alternative 6. During modeling, the PDT realized that raising the roads would cause the water that normally flowed over 13th Street East from the north to be blocked. Therefore, an additional culvert to the north of the 13th Street East and Central Avenue intersection was added to drain that area. The configuration of the features can be found in Figure 3-25.

The modeling results show that the maximum WSE is reduced by 2.11 feet during the 2%, 24-hr AEP storm upstream of the proposed culvert on Central Avenue. Table 3-13 provides the remainder of the storm events modeled. Figure 3-25 presents a difference map of the maximum WSE_{Pr} and WSE_{Ex} under the 2%, 24-hr AEP storm. Additionally, Figure 3-26 shows the existing versus proposed flood extent maps.

Table 3-13: Alternative 10: Maximum WSE Upstream (US) and Downstream (DS) of Culvert Locations

		Existing		Proposed		$WSE_{Pr} - WSE_{Ex}$
		Max WSE US (ft)	Max WSE DS (ft)	Max WSE US (ft)	Max WSE DS (ft)	Max WSE US (ft)
1st Avenue South	1%, 24-hr AEP storm	2.32	2.10	2.20	2.01	-0.12
	2%, 24-hr AEP storm	2.04	1.91	1.94	1.85	-0.10
	4%, 24-hr AEP storm	1.84	1.78	1.80	1.75	-0.04
	10%, 24-hr AEP storm	1.70	1.69	1.69	1.68	-0.01
13th Street East (North of Central)	1%, 24-hr AEP storm	9.91	9.91	6.82	6.80	-3.09
	2%, 24-hr AEP storm	8.56	8.56	6.47	6.45	-2.09
	4%, 24-hr AEP storm	7.81	7.81	6.09	6.08	-1.72
	10%, 24-hr AEP storm	7.22	7.22	5.66	5.65	-1.56
13th Street East (South of Central)	1%, 24-hr AEP storm	9.91	9.91	6.80	6.80	-3.11
	2%, 24-hr AEP storm	8.56	8.56	6.46	6.45	-2.10
	4%, 24-hr AEP storm	7.81	7.81	6.08	6.08	-1.73
	10%, 24-hr AEP storm	7.22	7.22	5.66	5.65	-1.56
Central Avenue	1%, 24-hr AEP storm	9.91	1.65	6.80	1.65	-3.11
	2%, 24-hr AEP storm	8.56	1.65	6.45	1.65	-2.11
	4%, 24-hr AEP storm	7.81	1.65	6.07	1.65	-1.74
	10%, 24-hr AEP storm	7.22	1.65	5.58	1.65	-1.64

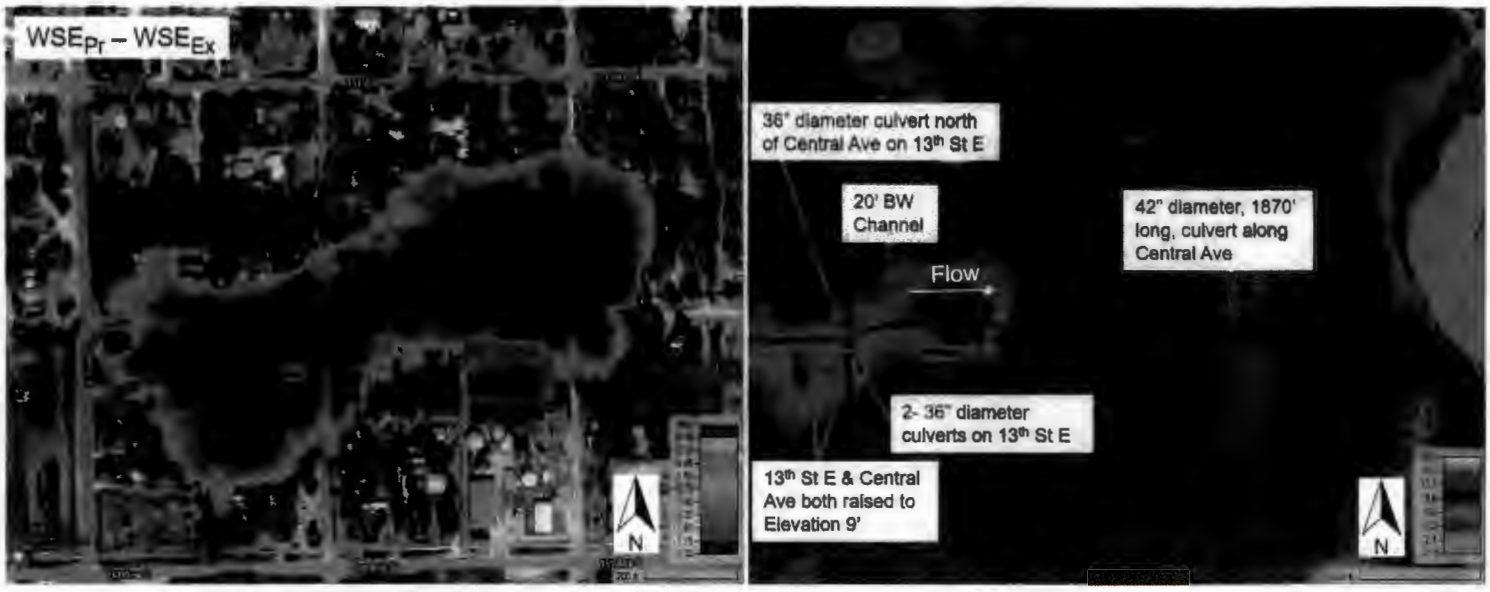

Figure 3-25: Alternative 10: Maximum WSE of Proposed minus Existing Conditions under 2%, 24-hr AEP Storm Event (left) The Configuration and Terrain of Proposed Condition (right)

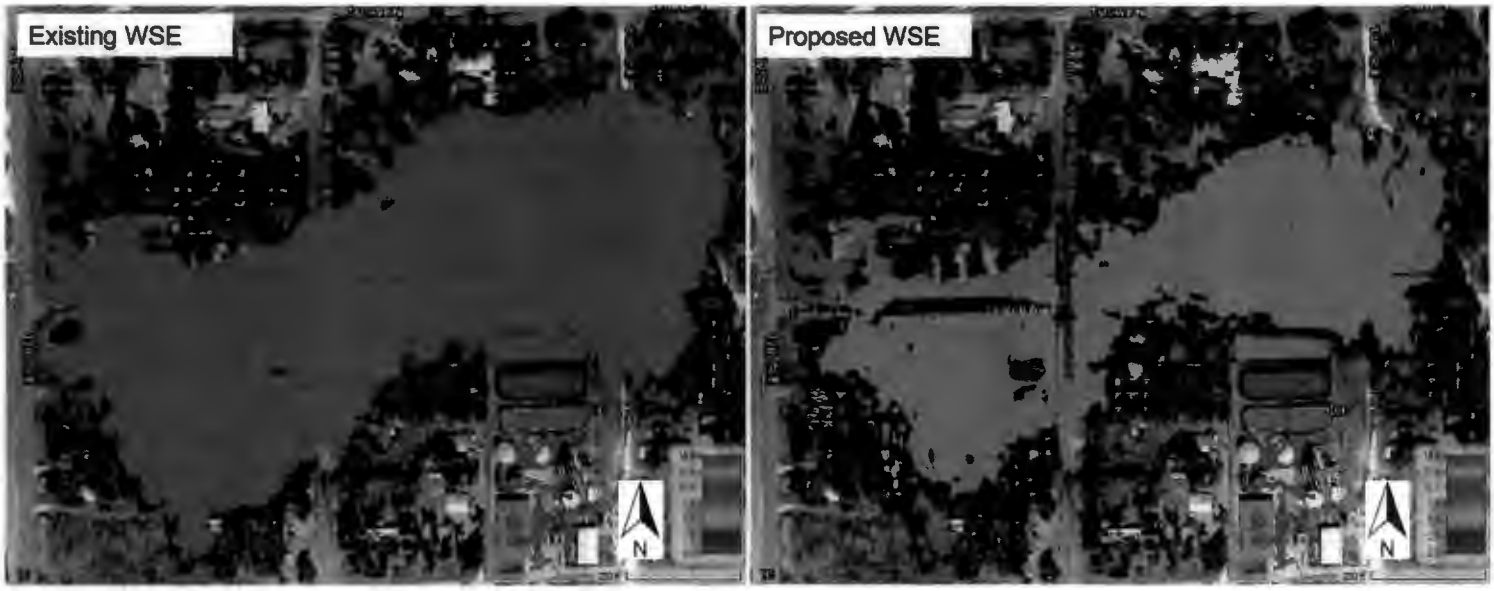

Figure 3-26: Alternative 10: Maximum WSE of Existing Conditions (left) and Proposed (right) under a 2%, 24-hr AEP Storm Event

3.5.12 Alternative 11: Eastern Alternatives [Pumping] (Alternatives 1, 5, and 6)

This alternative is identical to Alternative 10 with the exception that the culvert along Central Avenue is replaced with the pump explained in Alternative 5. For this alternative, a double-barrel, 36-inch-diameter culvert was added south of the 13th Street East and Central Avenue intersection, a single-barrel, 36-inch-diameter culvert was added north of the intersection, and a pump was added on the west end of Central Avenue that discharges into the river. Additionally, the existing channel upstream of the purposed pump is widened to a bottom width of 20 feet to connect the hydraulic systems and both 13th Street East and Central Avenue were raised to Elevation 9.0 ft. The configuration of the features can be found in Figure 3-27.

The modeling results show that the maximum WSE is reduced by 2.06 feet under the 2%, 24-hr AEP storm upstream of the proposed pump on Central Avenue. Table 3-14 provides the remainder of the storm events modeled. Figure 3-27 presents a difference map of the maximum WSE_{Pr} and WSE_{Ex} under the 2%, 24-hr AEP storm. Additionally, Figure 3-28 shows the existing versus proposed flood extent maps.

Table 3-14: Alternative 11: Maximum WSE Upstream (US) and Downstream (DS) of Culvert/Pump Locations

		Existing		Proposed		$WSE_{Pr} - WSE_{Ex}$
		Max WSE US (ft)	Max WSE DS (ft)	Max WSE US (ft)	Max WSE DS (ft)	Max WSE US (ft)
1st Avenue South	1%, 24-hr AEP storm	2.32	2.10	2.20	2.01	-0.12
	2%, 24-hr AEP storm	2.04	1.91	1.94	1.85	-0.10
	4%, 24-hr AEP storm	1.84	1.78	1.80	1.75	-0.04
	10%, 24-hr AEP storm	1.70	1.69	1.69	1.68	-0.01
13th Street East (North of Central)	1%, 24-hr AEP storm	9.91	9.91	7.50	7.50	-2.41
	2%, 24-hr AEP storm	8.56	8.56	6.51	6.50	-2.05
	4%, 24-hr AEP storm	7.81	7.81	5.71	5.69	-2.10
	10%, 24-hr AEP storm	7.22	7.22	5.58	5.57	-1.64
13th Street East (South of Central)	1%, 24-hr AEP storm	9.91	9.91	7.53	7.50	-2.38
	2%, 24-hr AEP storm	8.56	8.56	6.51	6.50	-2.05
	4%, 24-hr AEP storm	7.81	7.81	5.71	5.70	-2.10
	10%, 24-hr AEP storm	7.22	7.22	5.57	5.56	-1.65
Central Avenue	1%, 24-hr AEP storm	9.91	1.65	7.50	1.65	-2.41
	2%, 24-hr AEP storm	8.56	1.65	6.50	1.65	-2.06
	4%, 24-hr AEP storm	7.81	1.65	5.56	1.65	-2.25
	10%, 24-hr AEP storm	7.22	1.65	5.48	1.65	-1.74

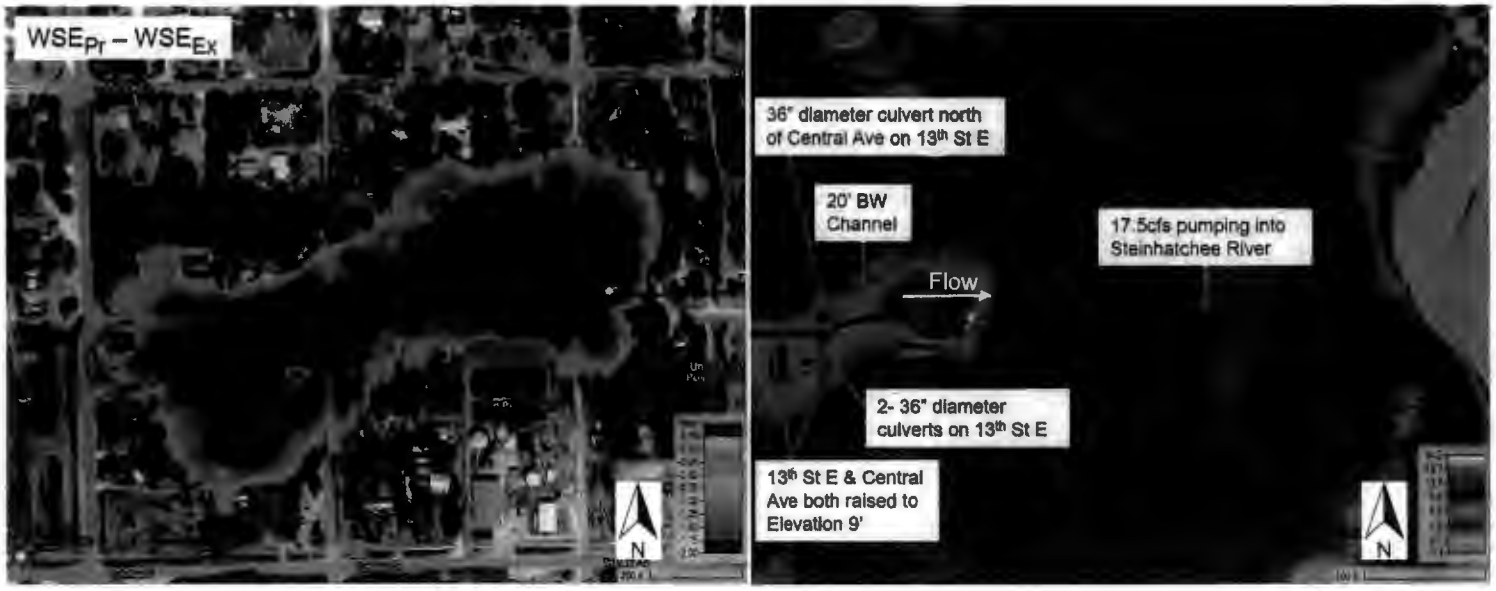

Figure 3-27: Alternative 11: Maximum WSE of Proposed minus Existing Conditions under 2%, 24-hr AEP Storm Event (left) The Configuration and Terrain of Proposed Condition (right)

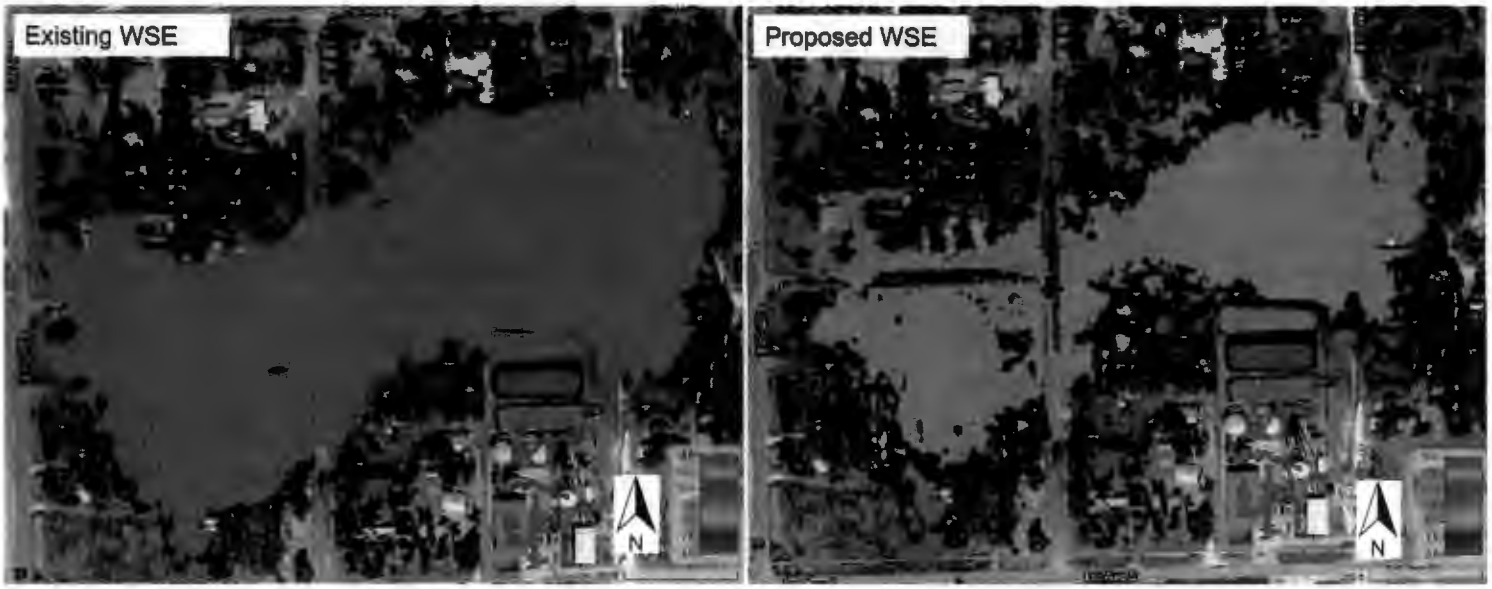

Figure 3-28: Alternative 11: Maximum WSE of Existing Conditions (left) and Proposed (right) under a 2%, 24-hr AEP Storm Event

3.5.13 Alternative 12: Western + Eastern Alternatives [Passive] (Alternatives 9 and 10)

This alternative is a combination of the all the alternatives previously discussed on the west side of Steinhatchee and all the eastern alternatives from Alternative 10. The purpose of this alternative and the next was to determine whether the two sides of Steinhatchee are hydraulically connected. For this alternative, the existing 6.6-foot x 8-foot double-barrel box culvert under 1st Avenue South was replaced with a 6-foot x 6-foot, triple-barrel box culvert, the existing single-barrel, 24-inch-diameter culvert under 2nd Avenue South was replaced with a single-barrel, 30-inch-diameter culvert at an invert 1.28 feet lower, a 24-inch-diameter culvert was added under 7th Street East. Additionally, a single-barrel, 3-foot x 20-foot box culvert was added under both 4th Street East and Allen Lane, a double-barrel, 36-inch-diameter culvert was added south of the 13th Street East and Central Avenue intersection, a single-barrel, 36-inch-diameter culvert was added north of the intersection, and an 1,870-foot-long, single-barrel, 42-inch-diameter culvert that discharges into the river was added along Central Avenue. 13th Street East and Central Avenue were raised as discussed in Alternative 6, and the same channels discussed in Alternative 9 and Alternative 10 were added.

The modeling results show that the maximum WSE did not change when the two sides were connected. Therefore, Table 3-12 above provides the storm events modeled for the western portion, and Table 3-13 provides them for the eastern portion. Figure 3-23 presents a difference map of the maximum WSE_{Pr} and WSE_{Ex} under the 2%, 24-hr AEP storm for the western portion, and Figure 3-25 provides the map for the eastern portion. Additionally, Figure 3-24 shows the existing versus proposed flood extent maps for the western portion and Figure 3-26 provides them for the eastern portion.

3.5.14 Alternative 13: Western + Eastern Alternatives [Pumping] (Alternatives 9 and 11)

This alternative is a combination of the all the alternatives previously discussed on the west side of Steinhatchee from Alternative 9 and all the eastern alternatives from Alternative 11. For this alternative, the existing 6.6-foot x 8-foot, double-barrel box culvert under 1st Avenue South was replaced with a 6-foot x 6-foot triple-barrel box culvert, the existing single-barrel, 24-inch-diameter culvert under 2nd Avenue South was replaced with a single-barrel, 30-inch-diameter culvert at an invert 1.28 feet lower, a 24-inch-diameter culvert was added under 7th Street East. Additionally, a single-barrel, 3-foot x 20-foot box culvert was added under both 4th Street East and Allen Lane, a double-barrel, 36-inch-diameter culvert was added south of the 13th Street East and Central Avenue intersection, a single-barrel 36-inch-diameter culvert was added north of the intersection, and a pump was added on the west end of Central Avenue that

discharges into the river. 13th Street East and Central Avenue were raised as discussed in Alternative 6, and the same channels discussed in Alternatives 9 and 11 were added.

The modeling results show that the maximum WSE did not change when the two sides were connected. Therefore, Table 3-12 above provides the storm events modeled for the western portion, and Table 3-13 provides them for the eastern portion. Figure 3-23 presents a difference map of the maximum WSE_{Pr} and WSE_{Ex} under the 2%, 24-hr AEP storm for the western portion, and Figure 3-27 provides the map for the eastern portion. Additionally, Figure 3-24 shows the existing versus proposed flood extent maps for the western portion, and Figure 3-28 provides them for the eastern portion.

3.6 Climate-Change Assessment

USACE established an overarching USACE Climate Change Adaptation Policy Statement to support climate preparedness and resilience in 2011. In 2014, the policy was updated and USACE established the Climate Preparedness and Resilience (CPR) Community of Practice (CoP). CPR policy states that climate-change assessments are to be considered for all phases of a project life cycle, for both existing and proposed projects. To determine the risk and resiliency of the project to climate change, this project was evaluated in compliance with USACE climate guidance.

3.6.1 Sea-Level Change (SLC) Due to Climate Change

The climate assessment for SLC follows the USACE guidance of both Engineer Regulation (ER) 1100-2-8162, Incorporating SLC in Civil Works Programs and Engineering Pamphlet (EP) 1100-2-1, Procedures to Evaluate SLC: Impacts, Responses, and Adaptation. ER 1100-2-8162 and EP 1100-2-1 provide guidance for incorporating the direct and indirect physical effects of projected future SLC across a project life cycle in managing, planning, engineering, designing, constructing, operating, and maintaining USACE projects and systems of projects.

The Steinhatchee Project study area is in the town of Steinhatchee, FL and discharges into the Steinhatchee River. The Steinhatchee River then flows into the Gulf of Mexico. Sea levels in the Gulf of Mexico are projected to rise in future years. The discharge point of the Steinhatchee River will be affected by sea-level rise. Additionally, due to the possible sinkhole directly connecting to the Steinhatchee River, the project area may be significantly impacted by SLC. To assess the vulnerability of the Steinhatchee Project to future SLC, the web-based USACE SLC Curve Calculator (SLCCC), available at https://cwbi-app.sec.usace.army.mil/rccslc/slcc_calc.html, was used. The nearest gauge in the SLCCC database is NOAA tidal gauge 8727520 near Cedar Key, FL. Using the SLCCC, sea level is projected to rise 0.42 feet to Elevation 4.74 ft by 2100. Figure 3-29

and Table 3-15 show the projected sea level rise at this gage in graphical and tabular form respectively.

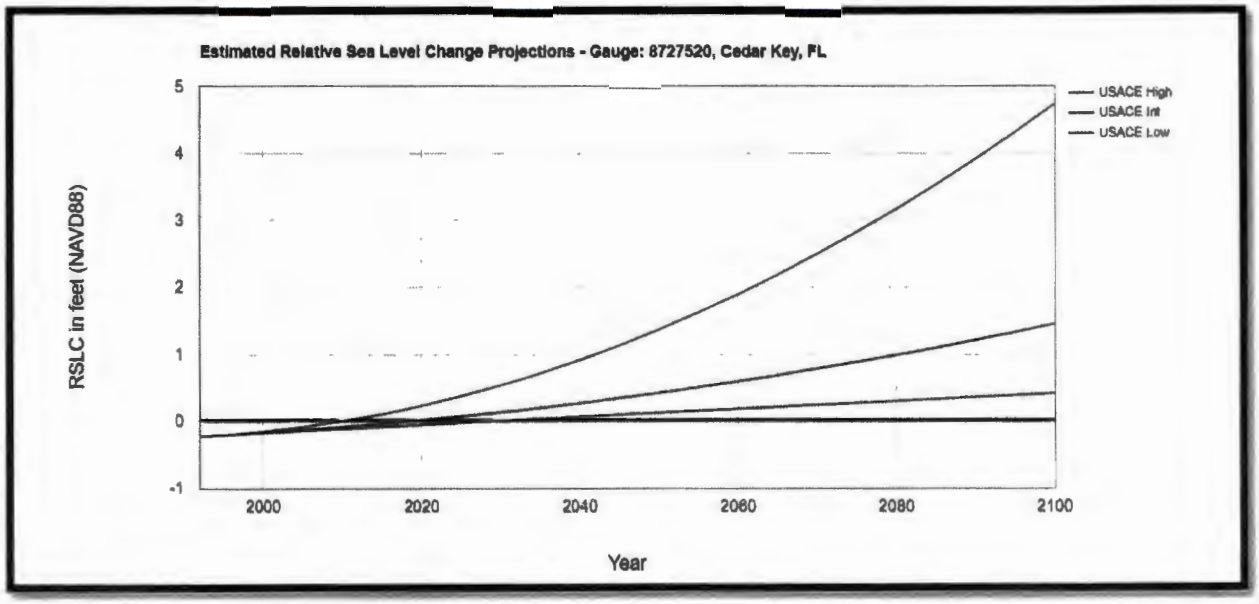

Figure 3-29: Estimated Relative SLC Projections for Cedar Key Gauge

Table 3-15: SLC Relative to Steinhatchee River

1992	-0.22	-0.22	-0.22
1995	-0.20	-0.20	-0.20
2000	-0.17	-0.17	-0.15
2005	-0.14	-0.13	-0.08
2010	-0.11	-0.09	0.01
2015	-0.08	-0.04	0.11
2020	-0.06	0.02	0.24
2025	-0.03	0.07	0.38
2030	0.00	0.13	0.54
2035	0.03	0.20	0.72
2040	0.06	0.27	0.92
2045	0.09	0.34	1.13
2050	0.12	0.42	1.37
2055	0.15	0.51	1.62
2060	0.18	0.59	1.90
2065	0.21	0.69	2.19
2070	0.24	0.78	2.50
2075	0.27	0.88	2.82
2080	0.30	0.99	3.17
2085	0.33	1.10	3.54
2090	0.36	1.21	3.92
2095	0.39	1.33	4.32
2100	0.42	1.46	4.74

Gauge Status: Active and compliant tide gauge
Epoch: 1983 to 2001
8727520, Cedar Key, FL
NOAA's 2006 Published Rate: 0.00591 feet per year
All values are expressed in feet relative to NAVD88

3.6.2 Inland Hydrology Due to Climate Change

The climate assessment for inland hydrology follows the USACE guidance of Engineering and Construction Bulletin (ECB) 2018-14, Guidance for Incorporating Climate Change Impacts to Inland Hydrology in Civil Works Studies, Designs, and Projects. ECB 2018-14 provides guidance for incorporating climate-change information in hydrologic analyses in accordance with (IAW) the USACE climate preparedness and resilience policy and ER 1105-2-101, Risk Assessment for Flood Risk Management Studies.

The vulnerability and risk to this project associated with inland hydrology climate change was assessed qualitatively as outlined in ECB 2018-14. In general, projects addressing climate change during the Floodplain Management Services (FPMS) phase of the

project are less comprehensive than projects evaluated at the feasibility phase and Preconstruction Engineering and Design phase.

The vulnerability assessment includes a literature review and an application of climate tools to evaluate observed and projected climate trends. The literature review includes the following sources specific to Florida and the surrounding region:

1. Recent U.S. Climate Change and Hydrology Literature Applicable to USACE Missions – South Atlantic-Gulf Region 03 (USACE, 2015a)
2. Climate Change Indicators in the United States (Environmental Protection Agency, 2016)
3. Climate Science Special Report: Fourth National Climate Assessment, Volume I (U.S. Global Change Research Program (USGCRP), 2017) and II (USGCRP, 2018)
4. NOAA State Climate Summaries (Runkle et al., 2017)
5. USACE Jacksonville District Report on Climate Change, Comprehensive Everglades Restoration Plan Central Everglades Planning Project Final Integrated Project Implementation Report and Environmental Impact Statement (USACE, 2014)

In addition to a literature review, the vulnerability assessment includes the application of climate tools used to provide information on observed and projected climate trends relevant to the project area. The following USACE CPR web-based tools were referenced in the analysis:

1. Climate hydrology assessment tool (CHAT) - evaluate historic and projected climate trends.
2. Nonstationary detection tool (NSD) - evaluate historic climate trends.

The CHAT and NSD analyses were performed using data from U.S. Geological Survey (USGS) gauge 02324000 Steinhatchee River, near Cross City, Florida. This gauge was selected because it is the closest to the project area and has long-observed flow and stage records.

Using the CHAT, a first-order statistical analysis of trends in observed, peak streamflow data was conducted using data from the Steinhatchee River gauge. An evaluation of historic trends shows no significant trend in the historically observed peak flow data over the period of record from 1951-2005.

The NSD was also used for USGS gauge 02324000 Steinhatchee River, near Cross City, Florida IAW ECB 2018-14. The tool analyzes whether the assumption of stationarity, which is the assumption that statistical characteristics of time-series data

are constant over the period of record, is valid for a given hydrologic time-series data set. An evaluation of the NSD results shows no significant non-homogeneity in the period of record to warrant consideration within the decision-making process.

3.6.3 Risk Assessment

Some observed and projected climate trends are evident based on the literature review. The watershed is most vulnerable to increases in extreme storm frequency and intensity and increases in air temperature. Therefore, it would be beneficial for the project to account for risk due to climate change by developing a strategy for adaptive management of the project. Per guidance in ECB 2018-14, Table 3-16 identifies risks resulting from changed climate conditions in the future. The table shows the major project feature, the trigger event (climate variable that causes the risk), the hazard (resulting dangerous environmental condition), the harms (potential damage to the project or changed project output), and qualitative assessment of the likelihood and uncertainty of this harm. Note that not all impacts of climate change will result in increased risk as there may be project benefits.

Adaptive management could be used as a means of ensuring that the project is resilient to the impact of climate change for the duration of the project life cycle. This includes that both the floodwall and the surrounding roadways can easily be adapted (raised) to handle extreme wet conditions. This will ensure that the plan selected is robust enough to accommodate changing climatic conditions.

Table 3-16: Climate Risk Assessment

Feature of Concern	[illegible]	[illegible]	[illegible]	[illegible]
Pump Stations	Increased extreme precipitation	Increased flow	The pump stations will no longer provide protection against the 2% AEP. The roads will overtop more frequently, and the pumps will run longer to drain the floodwaters.	Somewhat Likely
Pump Stations	Increased air temperature	Increased drought	Less water to flow through the pump and less flooding which is good for flood protection	Somewhat Likely
Sinkhole	Increased extreme precipitation	Increased flow	More water needs to flow through the sinkhole; flooding of protected area	Somewhat Likely
Sinkhole	Increased air temperature	Increased drought	Less water to flow through the sinkhole and less flooding which is good for flood protection	Somewhat Likely
Culvert	Increased extreme precipitation	Increased flow	More water needs to flow through the culvert; flooding of protected area	Somewhat Likely
Culvert	Increased air temperature	Increased drought	Less water to flow through the culvert and less flooding which is good for flood protection	Somewhat Likely

4 GEOTECHNICAL ANALYSIS

4.1 Background and Proposed Alternatives

The Taylor County FPMS Project is divided into Steinhatchee East and Steinhatchee West. The PDT developed similar alternatives for both sites and analyzed them using hydrologic and hydraulic models. USACE, Cost Section will provide an estimate to determine the cost-benefit ratio of the proposed alternatives listed below.

- Culvert expansion
- Culvert addition
- Channel creation
- Channel widening
- Pump station installation

- Raising of roads

4.2 Regional Geology

Peninsular Florida occupies a portion of the much larger geologic unit called the Florida Plateau. Deep water in the Gulf of Mexico is separated from deep water of the Atlantic Ocean by this partially submerged platform nearly 500 miles long and 450 miles wide. In the last 200 million years, the plateau has been alternately dry land or covered by shallow seas. During that time, up to 20,000 feet of carbonate and marine sediments were deposited. There has been a tilting of the Florida Plateau about its longitudinal axis. As a result, the west coast is partially submerged, as indicated by the wide estuaries and offshore channels, while the east coast is correspondingly elevated, showing the characteristics of an emergent coastline.

During the last million years, a series of four glacial periods, or ice ages, brought about significant changes in sea level. As a result of these sea-level fluctuations, the Florida Peninsula has been covered and exposed.

Approximately 15,000 years ago, sea level began its most recent rise towards present sea level. About 7,000 years ago, the rate of sea level rose to about 30 feet below its present level.

4.3 Local Geology

Taylor County is situated in Florida's Big Bend area, lying within a broad geomorphic subdivision named the Gulf Coastal Lowlands. The Gulf Coastal Lowlands are characterized as a low, flat, frequently swampy, seaward-sloping plain. The surface slope ranges between 1 and 5 feet per mile seaward. Limestone and dolostone, covered by a veneer of unconsolidated sand, form the near-surface bedrock in most of the county. The irregular, highly karstic Oligocene and Eocene carbonates underlying this area are masked by a blanket of undifferentiated Pleistocene sand. Near the coast, the undifferentiated sands are thin to absent. The top of the underlying carbonate bedrock rises gently from approximately sea level at the coast to an elevation of 60 feet above mean sea level in the northeastern corner of the county.

The oldest rock commonly penetrated by water wells in Taylor County is marine limestone of the Eocene Avon Park Formation. The Avon Park Formation and the younger overlying carbonates are important to freshwater aquifers. The Avon Park Formation is typically a dolostone, commonly interbedded with limestones and dolomitic limestones. The unit may contain varying amounts of peat, lignite, and plant remains. The top of the Avon Park Formation varies in depth from approximately 300 feet below land surface in northwestern Taylor County to about 90 feet below land surface in the southern part.

Marine limestones of the Ocala Limestone unconformably overlie the Avon Park Formation under all of Taylor County. It is divided into upper and lower units based on lithology. The lithology of the Ocala Limestone grades upward from alternating hard and soft fossiliferous limestone and dolomitic limestone of the lower unit into abundantly fossiliferous, chalky limestones of the upper unit. Thickness of the Ocala Limestone sediments under Taylor County ranges between 80 and 220 feet. It generally thins against the structurally high Avon Park Formation toward the crest of the Ocala Platform in the southern and eastern portions of the county. Depth to the irregular and highly karstic top of the Ocala Limestone is generally between 10 and 100 feet.

The Suwanee Limestone is an Oligocene-age marine limestone and dolostone underlying the northern two-thirds of Taylor County. The Suwannee Limestone pinches out against the Ocala Limestone along an approximate contact extending northeast-southwest from near the town of Salem to Little Bear Creek. North of this contact line, the Suwannee Limestone is the uppermost carbonate unit; to the south, beneath the town of Steinhatchee, the Suwannee Limestone is absent, and the Ocala Limestone forms the upper carbonate. The highly permeable and cavernous nature of the Ocala Limestone makes it an important freshwater bearing unit of the Floridan aquifer system.

4.4 Materials Encountered

USACE did not conduct a geotechnical investigation during the feasibility phase for the Taylor County Project. Data from the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey for Taylor County was reviewed as the source for general soils information.

4.4.1 USDA NRCS Web Soil Survey

The USDA NRCS Web Soil Survey was used as an approximation on likely soils within the project area. Variations in soil properties may occur with comparing data from the NRCS Web Soil Survey and actual data collected on the project site. The NRCS Web Soil Survey provides information of the soil types to a depth of around 80 inches. Figure 4-1 includes the soil map of the project area from the USDA NRCS web soil survey. Table 4-1 includes a summary of the soil types and material description of the encountered material within the site based on the information available from the USDA NRCS web soil survey.

Figure 4-1: USDA NRCS Soil Map

Table 4-1: USDA NRCS Web Soil Survey

Map Unit Symbol	Soil Name	Depth (in)	Material Description	USCS Classifications
6	Leon fine sand, 0 to 2 percent slopes	0-6	Fine sand, sand	SP-SM, SM
		6-25	Fine sand, sand	SP-SM, SM
		25-34	Fine sand, sand, loamy fine sand, loamy sand	SM
		34-80	Fine sand, sand	SP-SM, SM
12	Ortega fine sand, 0 to 5 percent slopes	0-5	Fine sand	SP-SM
		5-80	Fine sand	SP-SM
15	Ridgewood fine sand, 0 to 3 percent slopes	0-9	Fine sand	SP-SM
		9-80	Fine sand, sand	SP, SP-SM
17	Ousley	0-4	Fine sand	SM, SP-SM
		4-80	Sand, fine sand, coarse sand	SM, SP, SP-SM
	Leon	0-6	Fine sand	SP, SP-SM
		6-25	Fine sand	SP, SP-SM
		25-34	Loamy fine sand, fine sand	SM, SP, SP-SM
		34-80	Fine sand	SP, SP-SM
	Clara	0-6	Fine sand	SP-SM, SP

Map Unit Symbol	Soil Name	Depth (in)	Material Description	USCS Classifications
		6-19	Fine sand	SP-SM, SP
		19-32	Fine sand	SP, SP-SM
		32-80	Fine sand	SM, SP, SP-SM
21	Kershaw fine sand, 0 to 8 percent slopes	0-6	Fine sand	SP, SP- SM, SW
		6-80	Fine sand, sand	SP, SP-SM, SW
33	Wesconnett	0-10	Fine sand	SM, SP-SM
		10-40	Fine sand, sand	SM, SC-SM
		40-80	Sand, fine sand	SM, SP-SM
	Evergreen	0-9	Muck	PT
		9-21	Sand, fine sand	SM, SP-SM
		21-50	Fine sand, loamy fine sand	SP-SM, SM
		50-80	Fine sand, loamy fine sand	SM, SP-SM, SC-SM
	Pamlico	0-22	Muck	PT
		22-80	Sand, fine sand, loamy sand	SP-SM, SC-SM
34	Clara	0-6	Mucky fine sand	SP, SP-SM
		6-19	Fine sand	SP, SP-SM
		19-32	Fine sand	SP, SP-SM
		32-80	Fine sand	SM, SP, SP-SM
	Bodiford	0-12	Muck	PT
		12-18	Fine sand, mucky fine sand, mucky loamy fine sand	SM, SP-SM
		18-29	Fine sand, loamy fine sand	SM, SP-SM
		29-51	Fine sandy loam, sandy clay loam	SC, SC-SM
		51-55	Weathered bedrock	—
35	Tooles	0-8	Fine sand	SP-SM, SM
		8-52	Fine sand	SM, SP-SM
		52-59	Sandy clay loam, clay loam	CL, SC
		59-63	Weathered bedrock	—
	Meadowbrook, frequently flooded	0-9	Fine sand	SP, SP-SM
		9-58	Sand, fine sand	SP, SP-SM
		58-80	Fine sandy loam, sandy clay loam	SC, SC-SM, SM
	Wekiva soils, frequently flooded	0-6	Fine sand	SM, SP-SM
		6-14	Fine sand	SM, SP-SM
		14-21	Fine sandy loam, sandy clay loam	SC, SC-SM, SM
		21-25	Weathered bedrock	—
38	Clara	0-6	Mucky fine sand	SP, SP-SM
		6-19	Fine sand	SP, SP-SM
		19-32	Fine sand	SP, SP-SM
		32-80	Fine sand	SM, SP, SP-SM
	Meadowbrook	0-9	Fine sand	SP, SP-SM
		9-58	Sand, fine sand	SP, SP-SM

Map Unit Symbol	Soil Name	Depth (in)	Material Description	USCS Classifications
		58-80	Fine sandy loam, sandy clay loam	SC, SC-SM, SM
53	Bayvi muck, 0 to 1 percent slopes, frequently flooded	0-6	Muck	PT
		6-40	Loamy sand, mucky loamy sand	SP-SM, SM
		40-64	Sand	SP-SM
		64-68	Bedrock	—
71	Leon fine sand, rarely flooded	0-6	Fine sand	SP, SP-SM
		6-25	Fine sand	SP, SP-SM
		25-34	Loamy fine sand, fine sand	SM, SP, SP-SM
		34-80	Fine sand	SP, SP-SM

As shown in Table 4-1 the soils within the project limit varies from fine sand, fine sand with silt (SP, SP-SM), silty fine sand (SM), clayey fine sand and sandy clay (SC, CL), and muck (PT). Most of the near surface soils consist of fine sand and fine sand with silt (SP, SP-SM). These soils are better suited for earthwork and foundation support than silty sands (SM) or clayey sands (SC). Soils classified as SC, SM, ML, CL, CH, and MH tend to retain moisture and are difficult to place and compact properly, plus dewatering these types of soils is very difficult. Highly compressible organic peat (PT) soils are generally unsuitable for use in any aspect of construction. PT should be excavated from under any structure and replaced with satisfactory compacted fill.

4.5 Subsurface Investigation and Analysis Recommendations

The information available for review was limited. Site-specific geotechnical exploration is needed to support design calculations.

A slope stability and seepage analysis will need to be conducted for areas where channel creation, channel widening, raising of the roadbed, and culvert expansion or addition is being proposed. Based on the basic soil information obtained, 3H:1V slopes or flatter are recommended for the soils present.

The presence of low-strength material or organic material can negatively impact the strength of the proposed culverts and pump station's bearing surface or cause unwanted or differential settlement if found in the foundation soils. Therefore, bearing capacity and settlement analysis will need to be performed and considered in the design at each location.

Additionally, culvert outlet protection will be needed depending on the exit velocity of the culverts and the material encountered at each location. In the case of fine sand, if velocity exceeds 2 fps, outlet protection is advised.

5 PERTINENT DATA

No survey data was collected for this study. LiDAR data supplied by USGS (2018) as part of the statewide LiDAR project was used for the modeling. A comprehensive topographic survey acquisition is recommended at the outset of the design process to develop plans and specifications. This survey should provide the latest topographic features (wetland elevations and channels), easements, structures, utilities, and streets, etc.

6 CIVIL DESIGN

Attachment 1 to this appendix provides the calculations discussed in this section.

6.1 Project Features

Localized flooding was identified by the NFS throughout the town of Steinhatchee. Multiple recommended project features, such as pump stations, culverts and channels, are needed throughout Steinhatchee to address the NFS's flooding concerns. Some of the flooding locations have more than one option to reduce the flooding. Project features within Steinhatchee are primarily located at five locations. The following list and Figure 6-1 provide these locations from west to east.

1. Intersection of 4th Street East and Allen Lane
2. 1st Avenue South, east of Park Avenue
3. 7th Street East, south of 1st Avenue South
4. 2nd Avenue South, east of 7th Street East
5. Intersection of Central Avenue and 13th Street East

Figure 6-1: Project Features Locations

6.2 4th Street East and Allen Lane

At the intersection of 4th Street East and Allen Lane, three project features are recommended. The following list and

Figure 6-2 provide these locations.

1. Replace culverts at 4th Street East with a 3-foot x 20-foot concrete box culvert
2. Replace culverts at Allen Lane with a 3-foot x 20-foot concrete box culvert
3. Clear, grade, and construct a 40-foot-wide shallow drainage path/channel in the county-owned right of way.

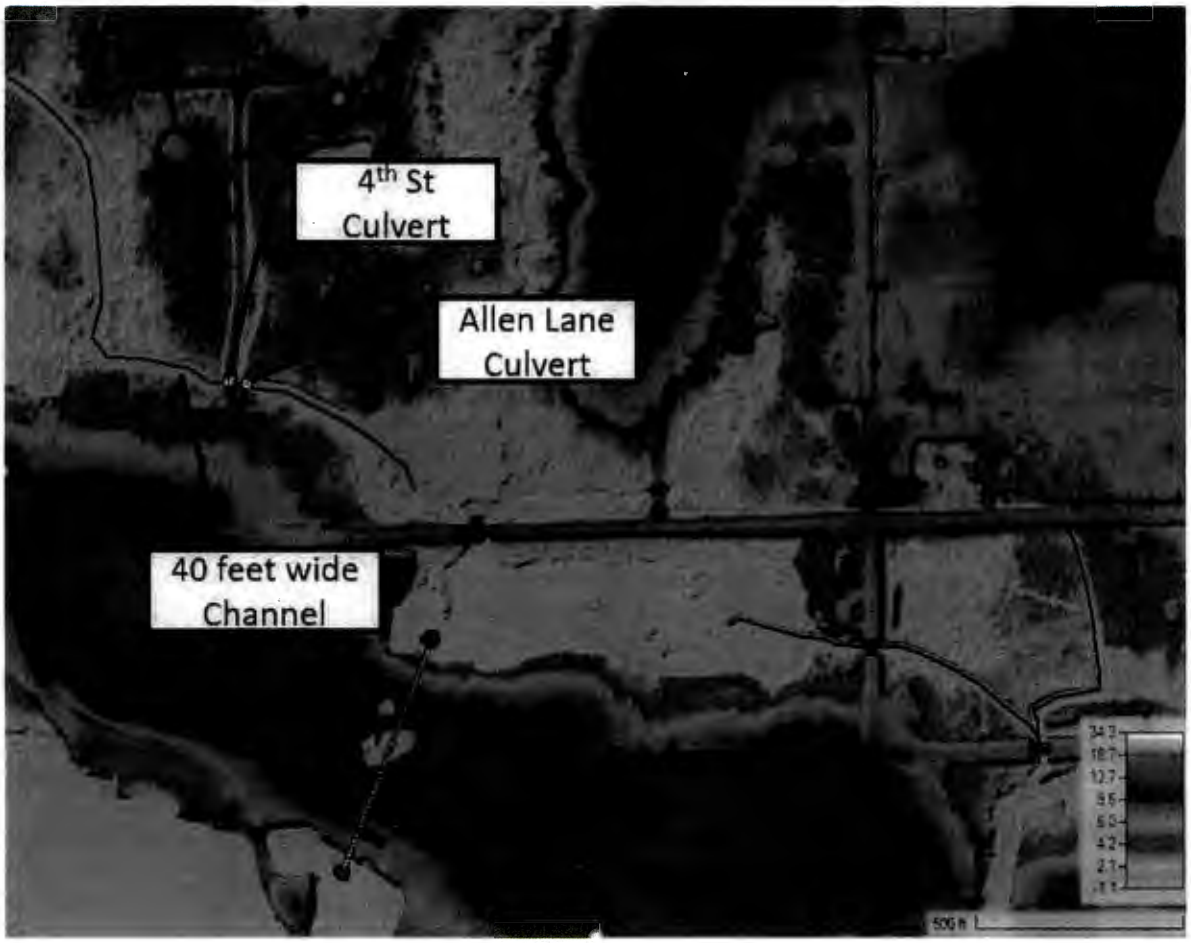

Figure 6-2: 4th Street East and Allen Lane Project Features

6.2.1 Culvert Sizing and Layout Optimization

The proposed box culverts were modeled as a series of two sets of 3-foot x 20-foot box culverts that cross 4th Street East then Allen Lane. Precast concrete box culverts are not available in 3 feet x 20 feet; therefore, the proposed box culverts are to be two sets of four 3-foot x 5-foot pre-cast concrete box culverts.

Due to a constrained budget for this project, optimization of the sizing and placement of the culverts will need to be further evaluated during full design. The HEC-RAS modeling results show that under a 10-year storm event, the culvert under 4th Street East will receive 35.6 cfs, and the culvert under Allen Lane will receive 49.9 cfs. The difference in the two culvert flow rates indicates that the area east of 4th Street East and north of Allen Lane (labeled Allen Lane sub-basin in Figure 6-3) has a flow rate of 14.4 cfs. Additional modeling will be required to confirm, but if the culvert layouts were rearranged to match Figure 6-3, both culvert sizes could be reduced thus providing project cost savings.

Figure 6-3: Alternative Culvert Layout

6.2.2 Clear Drainage Path/Channel in the County-Owned Right of Way

The proposed third feature of clearing, grading, and constructing a 40-foot-wide shallow drainage path/channel in the county-owned right of way will assist in creating a preferred flow path for the greater 4th Street East and Allen Lane area. The proposed channel path, shown in Figure 6-3, was modeled as a 3-foot-deep channel with a bottom width of 40 feet and 1V:3H side slopes. Figure 6-4 shows existing variations of elevation along the proposed channel path.

The overall elevation change in the greater 4th Street East and Allen Lane area varies over a 3-foot range. The actual goal for this project feature is to improve the grading in the area and clear any obstructions that would limit surface-water flow. Due to the minor elevation changes, the channel will likely be a 40-foot-wide channel with a mild 3-foot of elevation slope change over the 1,000+ feet of channel path.

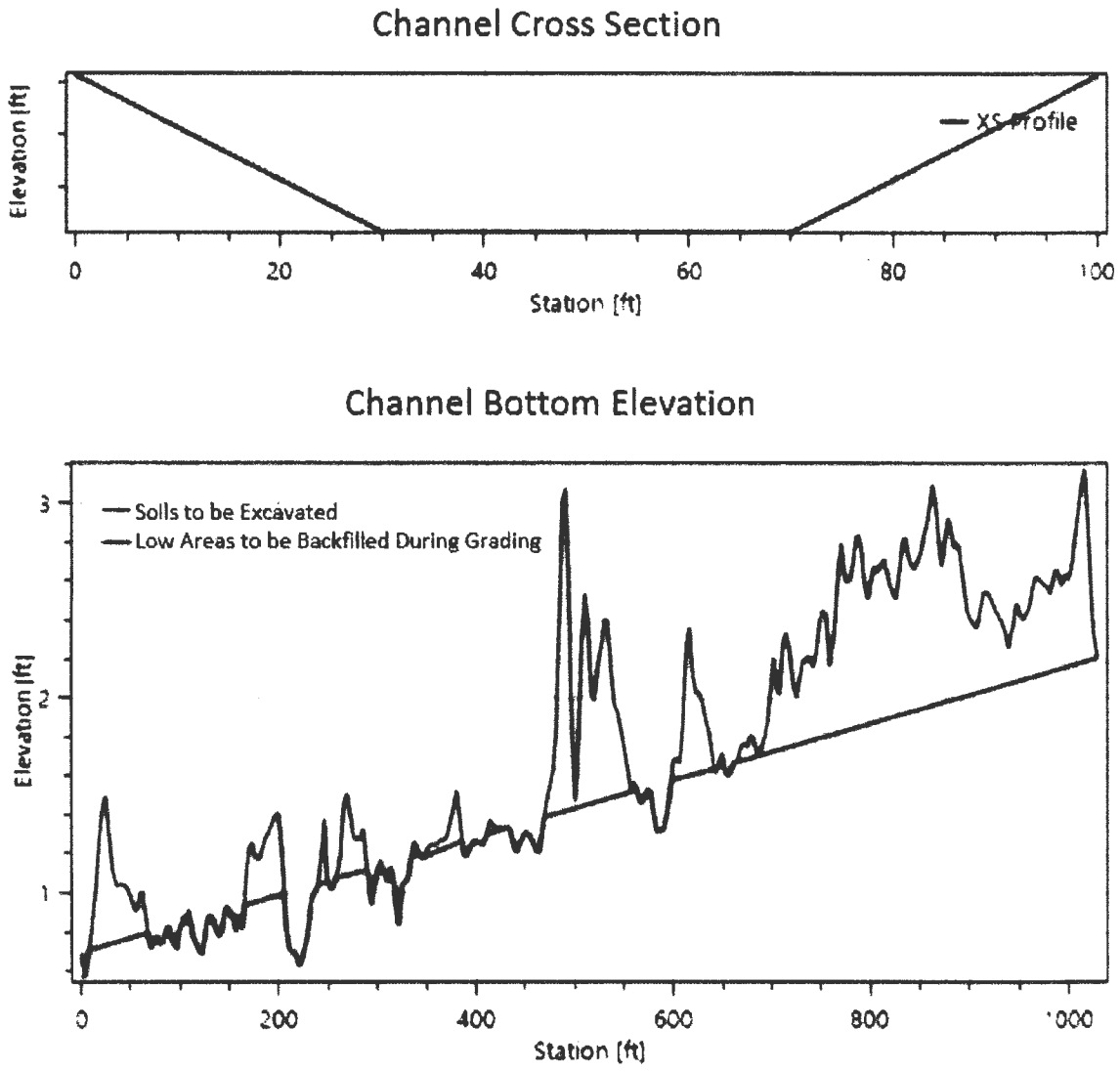

Figure 6-4: Modeled 4th Street East Channel Elevations

6.2.3 Earthwork Quantities

Excavation volumes for the two proposed culverts and channel were calculated. For the culverts, it was assumed that the road embankments would be excavated 3 feet plus 2 additional feet to allow for a bedding material and embankment cover over the culvert. The width of the excavation assumed 20 feet plus an addition 6 feet to allow space for the culverts' vertical walls. The channel depth was assumed to be 1 foot deep, 40 feet wide, and 1,500 feet in length. Due to the varying elevations shown in Figure 6-4, some of the material will be used to fill in the low areas along the channel path. Thus, for the earthwork quantities below, a channel depth of 0.75 feet was used instead of the 1-foot channel depth.

- Excavation volume (cf) for 4th Steet Culvert - 5,200 cf
- Excavation volume (cf) for Allen Lane Culvert - 3,900 cf
- Excavation volume (cf) for channel - 45,000 cf

6.2.4 Constructability Concerns

The proposed location for the new box culverts appears to be the only access point to several homes and properties to the north. Access to these properties will need to be maintained during the construction of the culverts as traffic can take no other route. Overhead power lines cross the project site. A power pole is on the east side of 4th Street East near the project site. Utilities may need to be relocated or deenergized during construction of the culverts to remove any possible electrical hazards during construction efforts. It is unclear if buried utilities are present in the area. A utility investigation will need to be completed to ensure that no buried utility lines are present at the project site. Depending on the groundwater elevation during the time of construction, dewatering may be required during the construction of the project features. Temporary pumps may be required to move water from the west side of 4th Street East to the east side as the new culverts are constructed. Without a temporary pump, water may back up during rain events and cause unintended flooding. The road at the project site is at the intersection of a paved road to dirt road interface. A portion of the paved road will be demolished during the construction efforts, and the decision to pave the area above the new culvert will need to be determined.

The project location for the channel is heavily wooded and will require the removal of trees and shrubs. It will also require excavation of soils that will need to be hauled off site and disposed of. The proposed channel will run between several private properties likely requiring an easement. Some of the properties for the channel may need to be purchased.

6.3 1st Avenue South

The culvert at 1st Avenue South, east of Park Avenue, drains the wetlands in a tidal-influenced southward flow. At the NFS's request, modeling was completed to increase the current box culverts from two 6.5-foot x 8-foot boxes to three 6-foot x 6-foot boxes. The results of this modeling were presented to the NFS, and a follow-on project is currently underway to replace the culverts. The new box culverts are not included in the estimate for this proposed Steinhatchee Project. Figure 6-5 presents the 1st Avenue South Culvert location.

Figure 6-5: 1st Avenue South Culvert Location

6.4 7th Street East

On 7th Street East, south of 1st Avenue South, two project features are recommended. The following list and Figure 6-6 provide these locations.

1. Install a new 24-inch-diameter HDPE culvert at 7th Street East
2. Clear, grade, and construct a 20-foot-wide shallow drainage path/channel from 7th Street East to new culvert at 2nd Avenue South (See Section 6.5)

The new culvert will be a 24-inch-diameter HDPE culvert with mitered end section on each side of 7th Street East. The culvert and mitered end sections should use Florida Department of Transportation's (FDOT) Standard Index 430-021, shown below in Figure 6-7.

The new shallow drainage path/channel will connect the tidal-influenced wetlands west of 7th Street East to the proposed new expanded culvert on 2nd Avenue South. The new channel will be comprised of two channels that allow for the surface-water runoff collected in the area east of 7th Street East to be conveyed to the 2nd Avenue South Culvert.

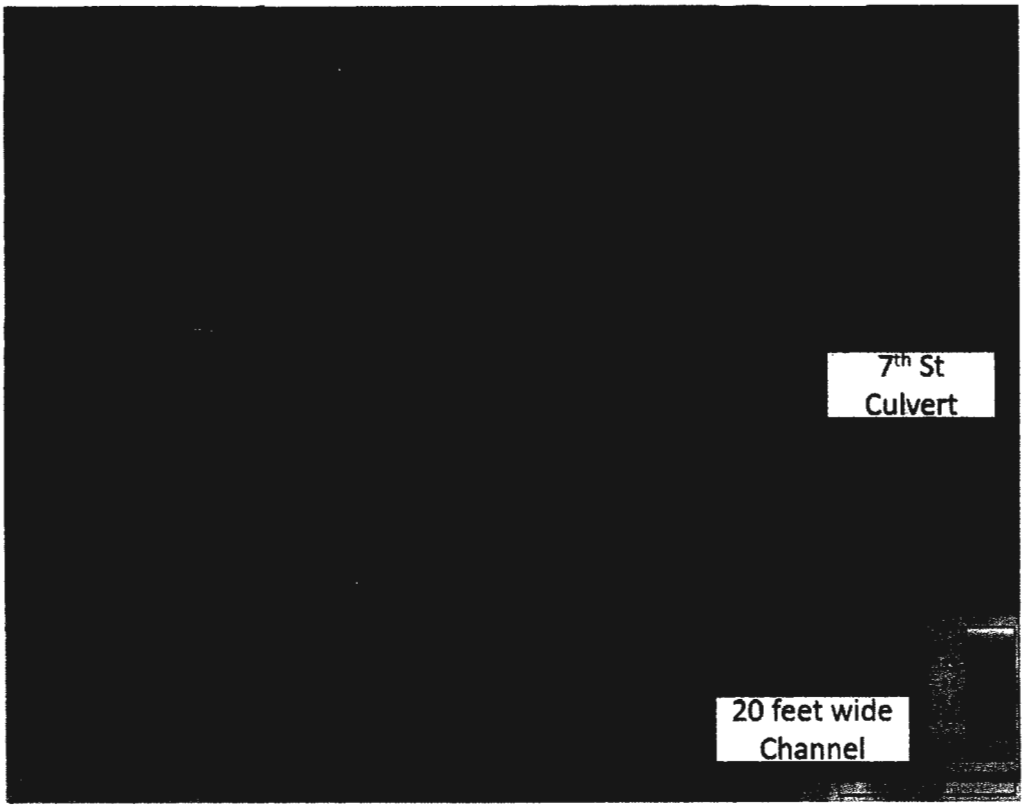

Figure 6-6: 7th Street East Project Features

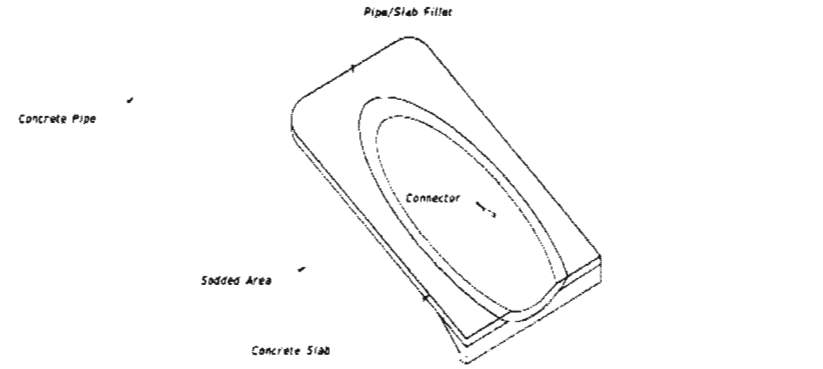

Figure 6-7: FDOT Standard Index 430-021

6.4.1 Earthwork Quantities

Excavation volumes for the proposed culvert and channel were calculated. For the culvert, it was assumed that the road embankments would be excavated 2 feet plus 2 additional feet to allow for bedding material and an embankment cover over the culvert. The width of the excavation assumed 2 feet plus an additional 1 foot to allow space for excavation backfill. The channel depth is assumed to be 1.5 feet deep, 20 feet wide, and 1,400 feet in length with 1V:3H side slopes. The channel excavation volume used a rectangular ditch with a 24.5-foot top width to be conservative.

- Excavation volume (cf) for 7th Steet East Culvert - 480 cf
- Excavation volume (cf) for channel - 51,450 cf

6.4.2 Constructability Concerns

The proposed location for the new 24-inch-diameter culvert would require traffic to be closed on 7th Street East during construction. Traffic could be easily rerouted via Park Avenue to the west or 9th Street East to the east. Overhead power lines are just north of the project site. Utilities may need to be relocated or deenergized during the construction of the culvert to remove electrical hazards present during the construction efforts. It is unclear if buried utilities are present in the area. A utility investigation will need to be completed to ensure that no buried utility lines are present at the project site. Depending on the groundwater elevation during the time of construction, dewatering may be required during the construction of the culvert. The localized areas on both sides of the proposed culvert are heavily wooded and may require the removal of trees and shrubs to open the flow path. Wetlands are located along the west elevation of 7th Street East and may limit the accessibility and constructability of the channel. After the proposed culvert is installed, 7th Street East would need to be repaved in the affected area.

6.5 2nd Avenue South

On 2nd Avenue South, east of 7th Street East, one project feature is recommended. The following list and Figure 6-8 provide these locations.

1. Expand the current 24-inch-diameter culvert at 7th Street East to a 30-inch-diameter HDPE culvert

The new culvert will be a 30-inch-diameter HDPE culvert with a mitered end section on each side of 2nd Avenue South. The culvert and mitered end sections should use FDOT Standard Index 430-021, shown above in Figure 6-7.

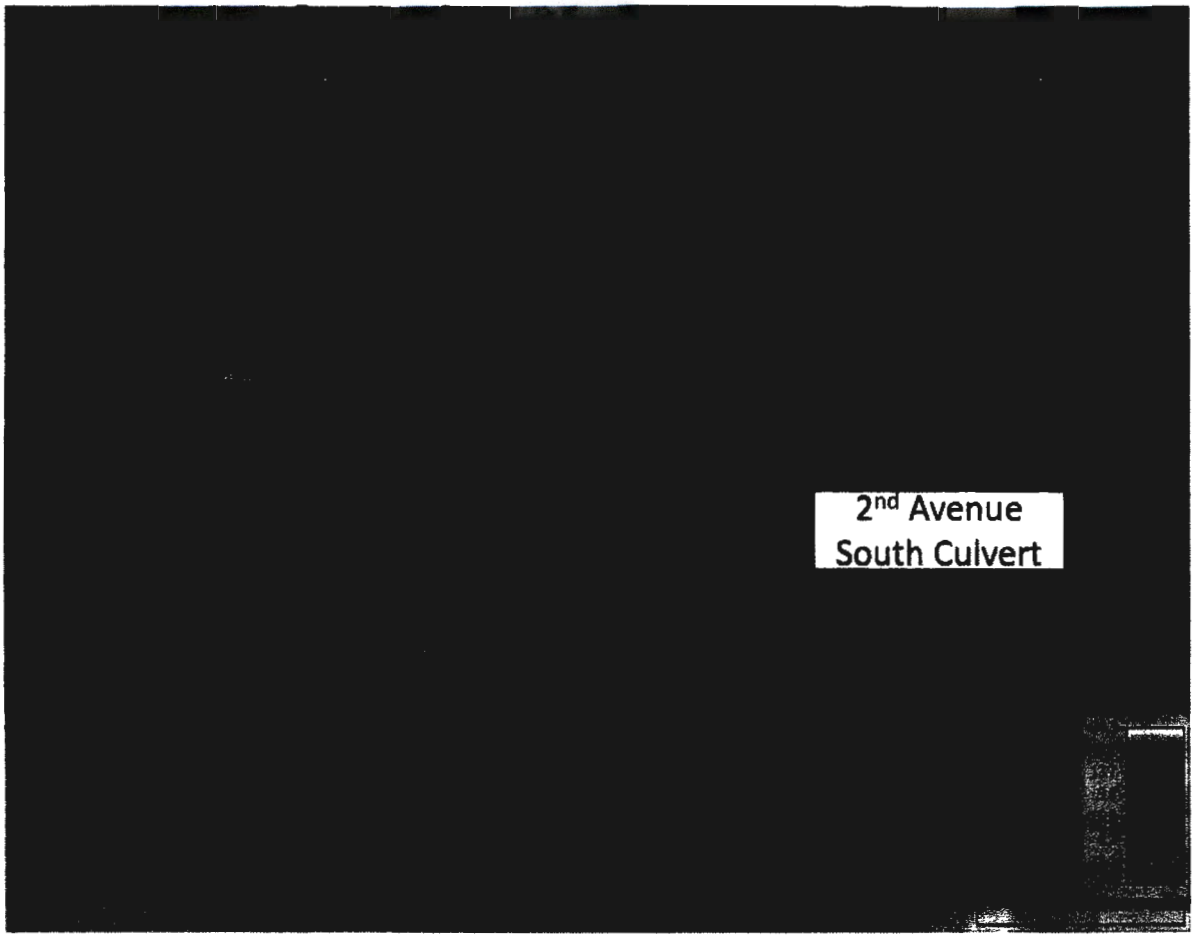

Figure 6-8: 2nd Avenue South Project Feature

6.5.1 Earthwork Quantities

The excavation volume for the proposed culvert was calculated. It was assumed that the road embankments would be excavated 2 feet plus 2 additional feet to allow for bedding material and an embankment cover over the culvert. The width of the excavation assumed 2 feet plus an additional 1 foot to allow space for excavation backfill. The length of the excavation was assumed to be 40 feet.

- Excavation volume (cf) for 2nd Avenue South Culvert - 480 cf

6.5.2 Constructability Concerns

The proposed location for the new 30-inch-diameter HDPE culvert would require closing traffic on 2nd Avenue South during construction. Traffic could be easily rerouted via 1st Avenue South to the north or Riverside Drive to the south. No overhead power lines are at the project site. It is unclear if buried utilities are present in the area. A utility investigation will need to be completed to ensure that no buried utility lines are present

at the project site. Depending on the groundwater elevation during the time of construction, dewatering may be required during the construction of the culvert. After the proposed culvert is installed, 2nd Avenue South would need to be repaved in the affected area.

6.6 Central Avenue and 13th Street East

Due to the natural topography at the intersection of Central Avenue and 13th Street East, stormwater accumulates in the neighboring properties. After storm events, the NFS routinely pumps this accumulated stormwater out of the area using portable pumps. Several different project features were studied in this area. Some of the studied features may not reduce flooding concerns, but they do add value to the sponsor and local residences. Some of these project features combined provide flood risk reduction but have varied initial construction cost and annual operation and maintenance requirements. Seven project features were identified in the Central Avenue and 13th Street East area. The following list and Figure 6-9 provide these locations.

1. Raise embankment elevations of both Central Avenue and13th Street East
2. Add culvert under 13th Street East, north of Central Avenue
3. Add culverts under 13th Street East, south of Central Avenue
4. Expand existing channel from north of Central Avenue at 13th Street East Culvert
5. Expand/construct channel from south of Central Avenue at 13th Street East Culvert
6. Construct pump station at Central Avenue, discharging eastward to river
7. Construct culvert at Central Avenue, discharging eastward to river

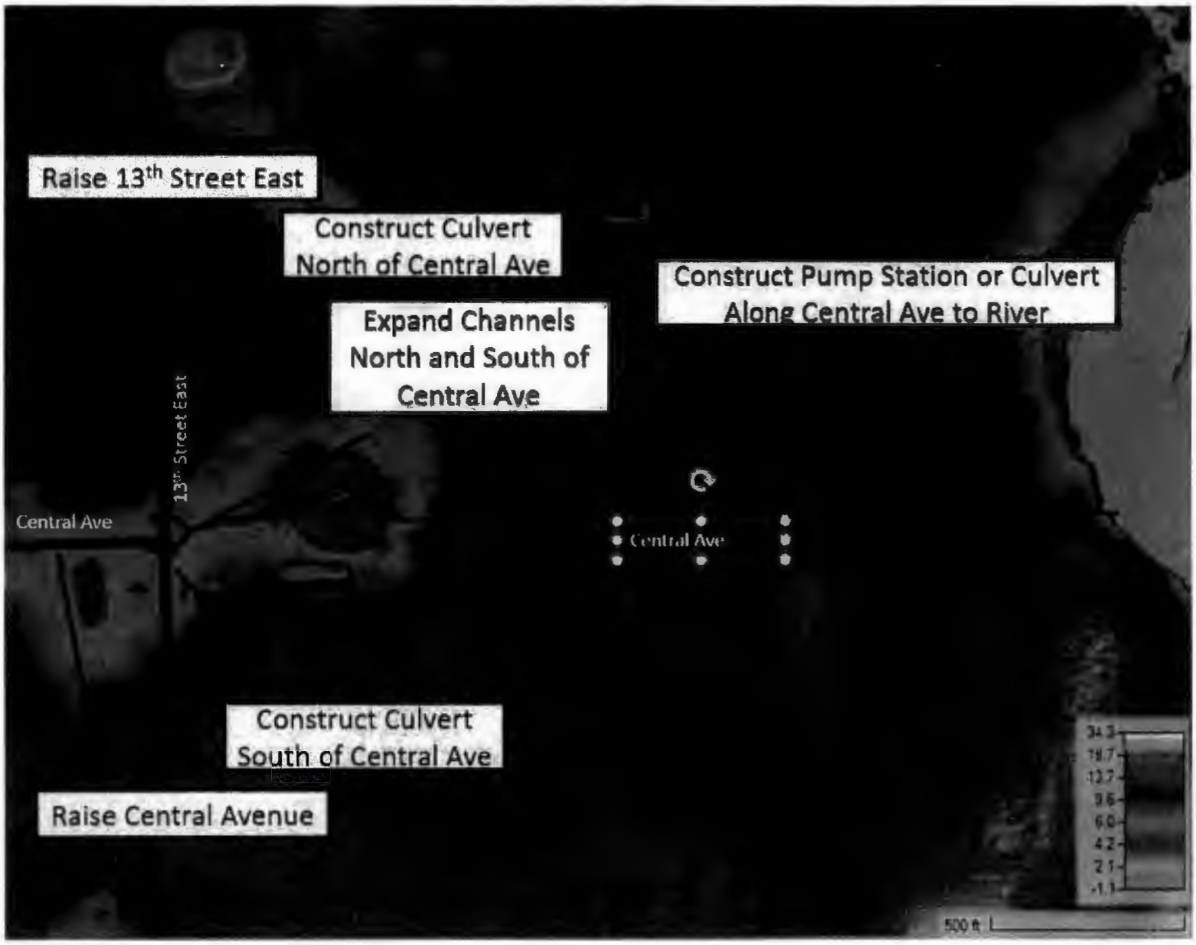

Figure 6-9: Central Avenue and 13th Street East Project Features

6.6.1 Raise Embankment Elevations of Both 13th Street East and Central Avenue

Due to the natural topography at the intersection of Central Avenue and 13th Street East, stormwater accumulates and overtops the roads. This overtopping of the roads leads to loss of public access and possibly evacuation blockage. There are other routes that are available to the public, but loss of access does occur. To overcome the loss of access, it is recommended to raise the Central Avenue embankment from 5.5 feet NAVD88 to 9 feet NAVD88 and the 13th Street East embankment from 6.5 feet NAVD88 to 9 feet NAVD88. This will raise the roads elevations above the localized flooding elevation for the modeled 50-year storm event of 8.56 feet NAVD88. This feature does not reduce any flooding and is more of a stand-alone feature. If other project features are implemented to reduce the accumulation of stormwater, raising of the road embankments is likely not required.

6.6.1.1 Earthwork Quantities

The lowest elevation on 13th Street East is 6.5 feet NAVD88. The lowest elevation on Central Avenue is 5.5 feet NAVD88. For estimation purposes, an assumed constant existing embankment elevation was used. An embankment width of 20 feet and a 450-foot-long section of each road was assumed to be raised. The asphalt volume assumes 4 inches of asphalt layer with no reuse of existing roadway asphalt.

- Fill volume (cf) to raise 13th Street East - 22,500 cf
- Fill volume (cf) to raise Central Avenue- 31,500 cf
- Asphalt volume (cf) needed to repave both 13th Street East and Central Avenue - 4,500 cf

6.6.1.2 Constructability Concerns

Raising the road embankments would require closing traffic to both roadways during construction. Traffic could be easily rerouted via 12th Street East to the west or 1st Avenue South to the south. No overhead power lines cross the project site, but overhead power is located along the east elevation of 13th Street East. A utility investigation would need to be completed to ensure that no buried utility lines are present at the project site. After the two embankments are raised, both roads would need to be repaved in the affected areas.

6.6.2 Add Culvert under 13th Street East, North of Central Avenue

Stormwater accumulates on the north side of Central Avenue, west of 13th Street East. To alleviate the stormwater accumulation, multiple project features will need to be implemented. To convey this accumulated stormwater eastward, a new 29-inch x 45-inch elliptical concrete culvert with mitered end sections is recommended. Figure 6-9 above shows the location for this project feature.

6.6.2.1 Earthwork Quantities

The excavation volume for the proposed culvert was calculated. It was assumed that the road embankments would be excavated 2 feet plus 2 additional feet to allow for bedding material and an embankment cover over the culvert. The width of the excavation assumed 4 feet plus an additional 2 feet to allow space for excavation backfill. The length of the excavation was assumed to be 40 feet.

- Excavation volume (cf) for 13th Street East Culvert, north of Central Avenue - 960 cf

6.6.2.2 Constructability Concerns

Installing the culvert under 13th Street East would require closing 13th Street East during construction. Traffic could be easily rerouted via 12th Street East to the west or 1st Avenue South to the south. Overhead power is located along the east elevation of 13th Street East. A utility investigation would need to be completed to ensure that no buried utility lines are present at the project site.

6.6.3 Add Culverts under 13th Street East, South of Central Avenue

Stormwater accumulates on the south side of Central Avenue, west of 13th Street East. To alleviate the stormwater accumulation, multiple project features will need to be implemented. To convey this accumulated stormwater eastward, two new 29-inch x 45-inch elliptical concrete culverts with mitered end sections are recommended. Figure 6-9 above shows the location for this project feature.

6.6.3.1 Earthwork Quantities

The excavation volume for the proposed culverts was calculated. It was assumed that the road embankments would be excavated 2 feet plus 2 additional feet to allow for bedding material and an embankment cover over the culvert. The width of the excavation assumed 13.5 feet plus an additional 2 feet to allow space for excavation backfill. The length of the excavation was assumed to be 40 feet.

- Excavation volume (cf) for 13th Street East Culvert, south of Central Avenue - 2,480 cf

6.6.3.2 Constructability Concerns

Installing the culvert under 13th Street East would require closing 13th Street East during construction. Traffic could be easily rerouted via 12th Street East to the west or 1st Avenue South to the south. Overhead power is located along the east elevation of 13th Street East. A utility investigation would need to be completed to ensure that no buried utility lines are present at the project site.

6.6.4 Expand Existing Channels from North of Central Avenue at 13th Street East Culvert

Stormwater accumulates on the north side of Central Avenue, west of 13th Street East, and along the east side of 13th Street East. To alleviate the stormwater accumulation, multiple project features will need to be implemented. To convey this accumulated stormwater eastward from the new 29-inch x 45-inch elliptical concrete culvert that was discussed is Section 6.6.2, a new channel will need to be constructed. A 20-foot-wide bottom width channel will need to be constructed from the new culvert and run 31 feet

southeastward until it connects to the new channel that is discussed in the below Section 6.6.5. The new channels will route stormwater eastward into the wetlands east of 13th Street East. Figure 6-9 above shows the location for this project feature.

6.6.4.1 Earthwork Quantities

The excavation volume for the proposed channel was calculated. The channel is assumed to be 2 feet deep, 20 feet wide, and 31 feet in length with 1V:3H side slopes.

- Excavation volume (cf) for the north channel - 1,412 cf

6.6.4.2 Constructability Concerns

Expanding the channel east of 13th Street East would likely not require the closure of any public roadways. Overhead power is located along the east elevation of 13th Street East. A utility investigation would need to be completed to ensure that no buried utility lines are present at the project site. An easement or buying property would likely be required to construct the channel.

6.6.5 Expand/Construct Channels from South of Central Avenue at 13th Street East Culvert

Stormwater accumulates on the south side of Central Avenue, west of 13th Street East, and along the east side of 13th Street East. To alleviate the stormwater accumulation, multiple project features will need to be implemented. To convey this accumulated stormwater eastward from the two new 29-inch x 45-inch elliptical concrete culverts that were discussed is Section 6.6.3, a new channel will need to be constructed. A 20-foot-wide bottom width channel will need to be constructed from the two new culverts and run 395 feet northeastward. This new channel will connect to the channel discussed in Section 6.6.4. The new channels will route stormwater eastward into the wetlands east of 13th Street East. Figure 6-9 above shows the location for this project feature .

6.6.5.1 Earthwork Quantities

The excavation volume for the proposed channel was calculated. The channel is assumed to be 2 feet deep, 20 feet wide, and 395 feet in length with 1V:3H side slopes.

- Excavation volume (cf) for the north channel - 18,170 cf

6.6.5.2 Constructability Concerns

Expanding the channel east of 13th Street East would likely not require the closure of any public roadways. Overhead power is located along the east elevation of 13th Street East. A utility investigation would need to be completed to ensure that no buried utility

lines are present at the project site. An easement or buying property would likely be required to construct the channel.

6.6.6 Construct Pump Station at Central Avenue, Discharging Eastward to the Steinhatchee River

Stormwater accumulates around the intersection of Central Avenue and 13th Street East. To alleviate the stormwater accumulation, multiple project features will need to be implemented. All project features discussed in Section 6.6, with the exception of Section 6.6.1, are designed to convey all stormwater eastward into the wetlands. To reduce flooding, the accumulated stormwater needs to drain from the wetlands eastward to the Steinhatchee River. To accomplish this, two alternatives were studied. The first was a pump station discussed in this section, and the second is a culvert discussed in the Section 6.6.7 below.

The pump station would be constructed on Central Avenue, along the east side of the wetlands. As the blue line in Figure 6-10 shows, the discharge pipeline will be installed along the north side of Central Avenue running eastward until it discharges into the Steinhatchee River. The pump station will discharge into an 18-inch-diameter HDPE pipe that will connect to the Steinhatchee River. The topography of the pipeline route rises from approximately EL. 4 feet NAVD88 at the pump station to a maximum of EL. 23 feet NAVD88 before the elevation lowers again to EL. 4 feet NAVD88 at the banks of the Steinhatchee River, shown in Figure 6-11. Due to the rise in elevations along the pipeline route, two methods of pipeline installation were studied: direct burial and directional drilling. The benefits of both installations using each method are discussed Section 6.6.6.1 below, and both are included in the estimate.

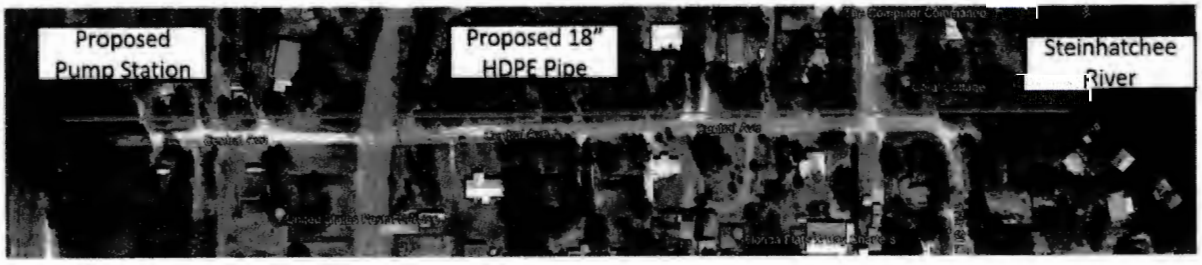

Figure 6-10: Pipeline Route

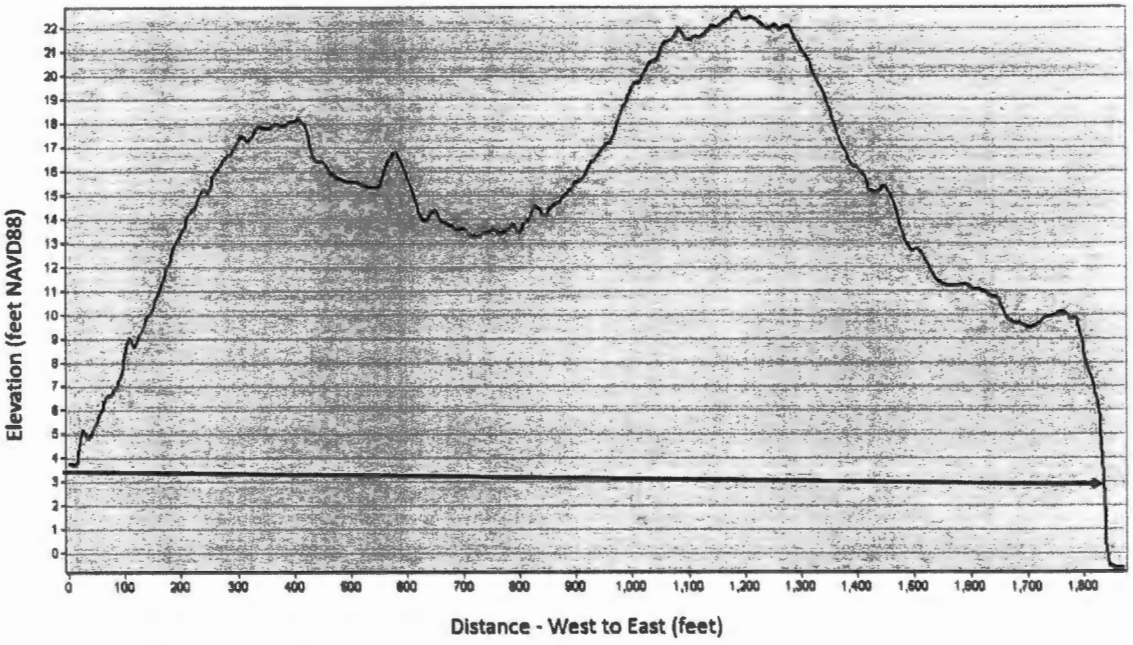

Figure 6-11: Elevation along Pipeline Route

6.6.6.1 Pipeline Construction Methods and Constructability Concerns

The pump station would be constructed on Central Avenue along the east side of the wetlands. Between the pump station and the Steinhatchee River are several private-property driveways, two road crossings, and approximately 20 feet of elevation change. Because of these, direct burial and directional drilling were the only methods of construction determined to be viable.

Direct burial is excavating an open trench and installing the 18-inch-diameter HDPE pipe 5 feet below grade. The pipe would follow the elevations of the existing grade minus the 5 feet of elevation from the excavation. As Figure 6-11 above shows, this method would require two highpoint air relief valves with maintenance valve boxes to be installed at pipeline high points located at approximately 350 feet and 1,200 feet. Direct burial will require cutting across two roads, 15th Street East and 17th Street East. After the pipeline is installed, both roads would need to be repaired in the affected areas. To avoid cutting through the roadways, directional drilling is an option.

Directional drilling the 18-inch-diameter HDPE pipe from the pump station continuously to the Steinhatchee River was studied. This method would reduce impacts to any roadways and could have a shorter construction duration. Dependent on the limitations of the drilling equipment, multiple open pits may be needed to push or catch the directional drilling equipment. Directional drilling would follow the red arrow path shown

on Figure 6-11. This would eliminate any high points in the pipeline and would create a continuous down-gradient sloped pipeline.

Overhead power lines run west to east along the southside of Central Avenue. The overhead power lines cross Central Avenue at several locations along the pipeline route. A utility investigation would need to be completed to ensure that no buried utility lines are present along the project site. Depending on the groundwater elevation during the time of construction, dewatering may be required during the construction of the project features.

6.6.6.2 Pipe Sizing and Layout Optimization

Additional optimization should be considered during design. Due to the elevation rising eastward, a single pump station and single culvert were studied. It is possible to have a hybrid of a pump station and multiple culverts that could be more cost effective. Ideally, a pump station would discharge into a culvert system that would discharge to the Steinhatchee River. The effectiveness of this option would need to be determined.

6.6.6.3 Earthwork Quantities

Excavation volumes for the direct burial of the pipeline were calculated. It was assumed that the pipeline would be installed 5 feet below grade along the path from the pump station to the Steinhatchee River. The width of the excavation assumed 42 inches plus an additional 2 feet to allow space for a trench box. The length of the excavation was assumed to be 1,870 feet. No directional drilling excavations were calculated due to the nature of the type of construction limits the excavations required.

- Direct burial excavation volume (cf) - 49,720 cf

6.6.7 Construct Culvert at Central Avenue, Discharging Eastward to the Steinhatchee River

As discussed in Section 6.6.6 above, to alleviate the stormwater accumulation at the intersection of Central Avenue and 13th Street East, either a pump station or a culvert will be needed to drain the accumulated water eastward to the Steinhatchee River. Section 6.6.6 discussed the pump station option. This section addresses the culvert option. A culvert inlet would be constructed on Central Avenue along the east side of the wetlands. This inlet would connect to a 42-inch-diameter HDPE culvert pipeline that would be installed along the north side of Central Avenue running eastward until it discharges into the Steinhatchee River. This culvert would follow the same path shown in Figure 6-10. As previously discussed, the topography of the pipeline route rises from approximately EL. 4 feet NAVD88, to EL. 23 feet NAVD88, then lowers again to EL. 4 feet NAVD88 at the banks of the Steinhatchee River, shown in Figure 6-11. Due to the

rise in elevations along the pipeline route, two methods of pipeline installation were studied: direct burial and directional drilling. Section 6.6.7.1 outlines the benefits of both installations for each method, and the estimate includes both.

6.6.7.1 Pipeline Construction Methods and Constructability Concerns

The culvert would be constructed on the north side of Central Avenue along the eastside of the wetlands. Between the wetlands and the Steinhatchee River are several private-property driveways, two road crossings, and approximately 20 feet of elevation change. Because of these, direct burial and directional drilling were the only methods of construction determined to be viable.

Direct burial is excavating an open trench and installing the 42-inch-diameter HDPE pipe at a continuous down-gradient slope. The culvert would follow the red arrow path shown on Figure 6-12. Due to the slope requirement, the excavation to install the culvert would reach approximately 22 feet in depth. To comply with Occupational Safety and Health Administration's trenching and excavation safety standards, and to limit the width of the trench, a double stacked trench box system would likely need to be constructed. This is a slow construction process that requires multiple trench boxes. Direct burial would require excavation across two roads, 15th Street East and 17th Street East. After the pipeline is installed, both roads would need to be repaired in the affected areas. To avoid excavating across a roadway, directional drilling is an option.

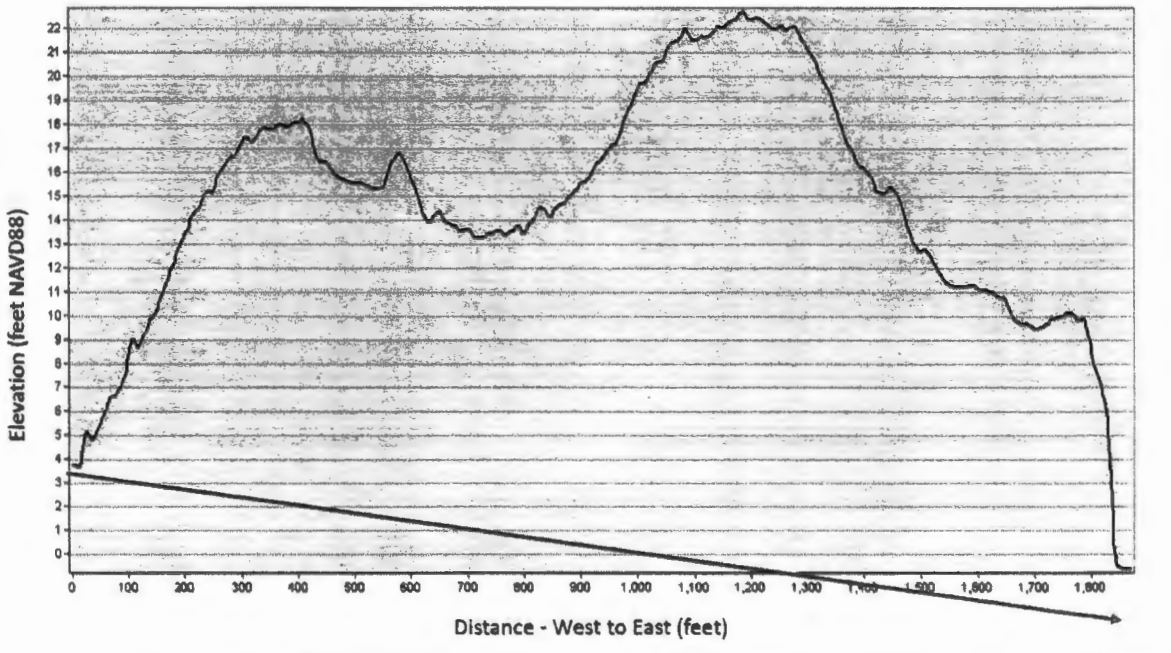

Figure 6-12: Elevation Along Culvert Route

Directional drilling the 42-inch-diameter culvert pipeline from the wetland continuously to the Steinhatchee River was studied. This method would reduce impacts to any roadways and could have a shorter construction duration. Dependent on the limitations of the drilling equipment, multiple open pits would be required to push or catch the directional drilling equipment. Directional drilling would follow the red arrow path reflected on Figure 6-12.

Overhead power lines run west to east along the south side of Central Avenue. The overhead powerlines cross Central Avenue at several locations along the pipeline route. A utility investigation would need to be completed to ensure that no buried utility lines are present along the project site. Depending on the groundwater elevation during the time of construction, dewatering will be required during the construction of the project features.

6.6.7.2 Earthwork Quantities

Excavation volumes for the direct burial of the culvert pipeline were calculated. It was assumed that invert elevation for pipeline would start at EL. 3.5 feet NAVD88 and end at -2.5 feet NAVD88. The width of the excavation assumed 42 inches plus an additional 2 feet to allow space for a trench box and backfill. The length of the excavation was assumed to be 1,870 feet. No directional drilling excavations were calculated due to the nature of the type of construction limits the excavations required.

- Direct burial excavation volume (cf) - 144,808 cf

7 STRUCTURAL REQUIREMENTS

Section 6 identified four types of Flood Control Structures with varying pipe diameters (refer to Table 7-1). These structures are common to roadway construction and therefore no structural analysis was done for this feasibility study. Where possible, to reduce design cost, the FDOT Standard Index drawings (refer to Table 7-1) will be utilized and adapted based on site conditions. Each of these structures requires a separate design effort as well as all customary site exploration activities (e.g., locate utilities, soil borings and testing, etc.) required to conduct design.

Table 7-1: Flood Control Structures

Area #1	4th Street E	3'x5' conc. box culvert (20' long)	Two	430-289/291
	Allen Lane	3'x5' conc. box culvert (20' long)	Two	430-289/291
Area #2	1st Ave South	Under construction and not part of this study		
Area #3	7th Street E	24" HDPE *culvert	One	430-021 or 430-030
Area #4	2nd Ave S	30" HDPE *culvert (length unknown)	One	430-021 or 430-030
Area #5	13th St E (N of Central Ave)	29"x45" elliptical *culvert (length unknown)	One	430-021 or 430-030
	13th St E (S of Central Ave)	29"x45" elliptical *culvert (length unknown)	Two	430-021 or 430-030
		Pump w/18" HDPE (approx. 1,800' long)	One	
	Along north side Central Ave	42" HDPE *culvert (approx. 1,800' long)	One	430-021 or 430-030
		Pump & HDPE culvert (hybrid)	TBD	

* = w/ mitered end sections

8 MECHANICAL AND ELECTRICAL REQUIREMENTS

8.1 Mechanical Requirements

8.1.1 Pump Station

The pump station will have a capacity of 17.5 cfs, with a pump mix of two 17.5 cfs pumps, one of which being a redundant pump. The pump station will consist of separate inlet bays with independent trash racks, submersible, centrifugal-flow pumps, discharge piping, a discharge flap gate, and accessories.

8.1.2 Pumping Station Features

8.1.2.1 Inlet Bays

The inlet bays will serve as the approach for the pump intake and a location for the trash rack. The depths of the supply canals and intake bays will be determined by considering WSE in the supply canal and intake bays, minimum required submergence over the pump intakes, and minimum vertical clearance between the pump intakes and the floor of the sump. The pump manufacturer will determine minimum submergence for the pumps.

8.1.2.2 Discharge Arrangement

The discharge for the pump station will be routed along the embankment buried 5 feet below the existing grade with discharge pipes, air vent valves, and a flap gate.

To prevent backflow (two means are necessary) from the tailwater area back to the headwater area, the maximum invert of the discharge pipes for the inflow pumps will be set at a higher elevation than the pumping high-water level in the discharge basin as it is routed along the embankment. The maximum invert for the discharge pipe will be approximately EL. 17.5 feet NAVD88. For the second means of backflow prevention, the pump station will also incorporate flap gates.

Each of the pump discharge pipes will have an air-relief valve installed at the high points of the pipe routing for air to escape during filling.

8.1.3 Pump Station Equipment

8.1.3.1 Inflow Pumps

The pump station will be equipped with electric motor-driven, submersible, centrifugal-flow pumps. This pump type is a completely submerged, self-contained unit with a bell entrance, propeller, planetary reduction gear, motor, and diffuser. The unit will be supported and housed by a steel discharge column, and there will be the ability of removal without unbolting the discharge piping. Use of this submerged unit provides for a quiet operation and permits the pump station's superstructure size to be greatly reduced.

8.1.3.2 Electric Motors

Electric motors will drive the submersible, centrifugal, inflow pumps that will be used in this project. The motor's horsepower rating will be determined after examining the horsepower requirements when operating in the required operating range from the minimum static head (and corresponding minimum total dynamic head (TDH)), through

the design point (design point static head and TDH), and to the maximum static head and TDH in the priming state.

8.1.4 Modeling

8.1.4.1 Physical Modeling

Per South Florida Water Management District's Pump Station Engineering Guidelines, "a physical model study is recommended for pump intakes with pumps of an open bottom barrel or riser arrangement (i.e., submersible pumps) with flows greater than 5,000 gpm (10 cfs)." Due to the small capacity for this station (17.5 cfs), a physical model study is recommended, but not required.

A physical model study is a reliable method to identify unacceptable flow patterns at the pump suction for a given pump station design and to develop acceptable intake sump or piping designs. A physical hydraulic model study will be conducted for pump intakes with one or more of the following features.

- A suction intake arrangement with an elevation relative to the water level that does not provide the minimum submergence requirement of this standard, irrespective of the pump manufacture's stated submergence values.
- The intake design is not a standard intake design presented, and this standard of the geometry deviates from this standard.
- There is no prior physical model study for the intake design in terms of physical features and flow rates.
- A nonuniform or asymmetric approach flow to the pump sump exists.
- Proper pump operation of a critical service or application is required as defined by the customer.
- Pump repair, remediation of a poor design, and the impacts of inadequate performance or pump failure would cost more than 10 times the cost of a physical model study.
- The pumps have flows greater than 40,000 gpm per pump, or the total station flow with all pumps running would be greater than 100,000 gpm.

A hydraulic laboratory using personnel who have experience in modeling pump intakes traditionally conduct the physical model study.

A properly conducted physical model study can be used to establish remedial measures, if necessary, to alleviate undesirable flow conditions caused by the approach upstream from the pump impeller. The objective of a physical model study is to ensure

that the final sump or piping design generates favorable flow conditions at the inlet to the pump.

8.1.4.2 Computational Fluid Dynamics (CFD) Modeling

CFD modeling may be useful in determining the general approach flow to a sump and pump suction piping. CFD simulations can be used to determine the extent of the physical model and the velocity distribution needed at the physical model boundary. One useful application of CFD modeling is determining whether physically modelling a single pump bay or single suction pipe would be adequate. CFD simulations may also compare designs to aid in the initial selection of a design for testing using a physical model and to better define the range of variables to be tested.

8.2 Electrical Requirements

8.2.1 General

The electrical design focuses on the portions of the Taylor County Floodplain Management Services (FPMS) that require electrical power to properly operate. At a minimum, the pump station requires systems and components related to electrical power service, transfer switch, grounding, lightning protection, exterior electrical distribution, electrical distribution for two electric motor-driven pumps, general-use receptacles, lighting, controls, monitoring, water-level sensors, stilling wells, fire detection, intrusion detection, and security camera surveillance. All electrical equipment will be installed within a pre-cast pump station control building. The system – or component-specific paragraph within this section explains additional information on the project's electrical requirements. Electrical design will be IAW federal, state, and local jurisdiction ordinances. The most stringent requirement will govern when two or more ordinances address the requirement. Where there is contradiction between two or more directives, the electrical design will seek a reasonable resolution from the Authority Having Jurisdiction (AHJ).

8.2.2 Electrical Utility Relocations

The Taylor County FPMS Project is adjacent developed residential property. As would be expected, both high-voltage transmission and distribution electrical lines are close to the Taylor County FPMS Project site. Currently, no electrical utilities require relocation for construction or operation of the pump station. The utility company for electrical service to the pump station is Florida Power and Light (FPL). Maintaining regular periodic coordination with FPL will minimize utility relocations in the future.

8.2.3 Electrical Power Service

FPL will provide the pump station with pole-mounted transformer(s), meter(s), and service to the meter base. The electrical service required for the pump station is 277/480-volts, 3-phase, 60-Hz stable, and reliable. Transient voltage surge suppression will be provided at the service entrance.

8.2.4 Grounding and Lightning Protection System

The grounding system will include a grounding conductor buried around the pump station control building and connected to three ground rods spaced approximately 10 feet apart. The ground rods will be connected via grounding conductors in an equilateral triangle arrangement. Door-embedded metal masses, sheet piles, structure steel, door-frame equipment, and electrical enclosures will be bonded to the grounding system. The pump station grounding system will be IAW National Fire Protection Association (NFPA) 70. A lightning protection system IAW NFPA 780, Standard for the Installation of Lightning Protection Systems will be installed on the pump station roof. The lightning protection system will consist of interconnected air terminals with a roof ground ring. At least two down conductors will be connected to the station-grounding ring. A test well will be connected to the grounding system for resistance testing of the grounding system.

8.2.5 Exterior Electrical Distribution

Any underground electrical lines will be placed in a PVC conduit for protection. Any buried electrical conduit subject to vehicle traffic loading will be encased in a concrete duct. Light fixtures will be installed on poles rated to predetermined hurricane strength wind loading requirements. Exterior lighting will use LED fixtures with photocell switches that turn the fixture off during daylight hours. The photocell switches will be incorporated into a lighting contact control when several lights are present at the pump station site. The lighting contact will include an on-off-auto control switch. The exterior electrical distribution will be IAW IEEE C2, National Electrical Safety Code, and FPL standards and requirements.

8.2.6 Interior Electrical Distribution

A motor control center (MCC) rated for 600 volts and 3-phase with a main breaker will be connected to the incoming service of 277/480-volts, 3-phase, and will feed electric motors via soft starters. The MCC will be placed on a rebar-reenforced, 4-inch-high housekeeping pad above the finish floor. The electric motors for the pumps are rated 230-hp with full load amps up to 286 amps. The electrical motors will have power factor correction in their control schematic. The MCC will feed dry type transformer for 120/208-volt, 3-phase power panels. All electrical loads, excluding the pump motors, will

have a breaker-protected branch circuit from the 120/208-volt power panel. The power panel will have a minimum of 36 slots for breakers and spares. Exterior, general-use receptacles will be weather protected. Surge suppression will be provided for each electrical/electronic system for the pump station. An electrical design software suite will be used to develop an electrical design and conduct an arc flash hazard analysis.

8.2.7 Controls and Monitoring

The control systems will include manual, automatic, and telemetry capabilities for the pumps and auxiliary systems. Telemetry capabilities may be obtained via a commercial cellular network, an existing internet network, or a dedicated NFS-designed microwave network. Electric motor-driven pumps will be controlled from the MCC and pump control station. Equipment, water-level devices, motor temperatures, pump temperatures, and well head pressures will be electrically monitored for safe operation or as required by the equipment manufacturers.

8.2.8 Water-Level Sensors and Stilling Wells

Water-level sensors in stilling wells will be installed at or near each pump. One water-level sensor will provide continuous water-level status. Each pump will have two water-level sensors to provide normal cutoff and ultimate cutoff for the pump.

8.2.9 Fire Detection and Alarm

The pump station will be equipped with fire detection and an alarm panel. An audible and visual alarm will be activated at the station when smoke or fire is detected. The alarm status will be transmitted via the telemetry system to the central control station or as required by AHJ. The fire detection and alarm system will be IAW NFPA 72, National Fire Alarm and Signaling Code.

8.2.10 Intrusion Detection and Alarm

The pump station will be equipped with an intrusion detection and alarm system. An audible and visual alarm will be activated at the pump station when an intrusion is detected. The alarm status will be transmitted via the telemetry system to the central control station.

8.2.11 Security Camera Surveillance

The pump station will be equipped with a security camera surveillance system. The output from the system will be viewable in the station and at the central control station.

9 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE (HTRW)

Phase I and Phase II Environmental Site Assessments (ESAs) are not part of the scope of this study. It is recommended that a Phase I ESA be completed prior to design.

10 CONSTRUCTION COSTS

Table 10-1 shows the estimated construction costs. The costs are at FY22 price levels. These estimates include the cost of mobilization, demobilization, adding or expanding culverts at different locations, adding or expanding channels at different locations, regrading a county-owned right of way and raising 13th St East and Central Ave. For Alternatives 4 and 5, the costs of two construction methods for installing drainage pipe were developed. Those costs are shown separately in the table below. The pump station cost is based on similar pump station projects completed by USACE, Jacksonville District. The costs do not include design, real estate, or permitting costs. Attachment 2 provides the approved cost estimate.

Table 10-1: Estimated Costs

Alternative Description	Construction Cost
2: Expand culvert at 2nd Avenue South	$19,000
3: Add culvert at 7th Street East, Add channel at new culvert at 7th Street East	$470,000
4a: Add culvert inlet at Central Avenue, pipe (directional drilling method*), expand existing channels from south of Central Avenue at 13th Street East, expand existing channels from north of Central Avenue at 13th Street East, add culvert under 13th Street East south of Central Avenue, add culvert under 13th Street East north of Central Avenue	$1,558,000
4b: Add culvert inlet at Central Avenue, pipe (open trench method*), expand existing channels from south of central Avenue at 13th Street East, expand existing channels from north of Central Avenue at 13th Street East, add culvert under 13th Street East south of Central Avenue, add culvert under 13th Street East north of Central Avenue	$1,320,000
5a: Pump station at Central Avenue, pipe (directional drilling method*), expand existing channels, add culvert under 13th Street East south of Central Avenue, add culvert under 13th Street East north of Central Avenue	$4,348,000

5b: Pump station at Central Avenue, pipe (open trench method*), expand existing channels, add culvert under 13th Street East south of Central Avenue, add culvert under 13th Steet East north of Central Avenue	$4,255,000
6: Raise 13th Street East and Central Avenue	$267,000
7: Expand culvert at 4th Street East, expand culvert at Allen Lane, regrade county-owned ROW	$635,000

*Two construction methods for installing drainage pipe (directional drilling and open trench) are included in Alternatives 4 and 5. Costs for each construction method are given.

11 RISK REGISTER AND RECOMMENDATIONS

11.1 Risk Register

Due to the nature and intent of the FPMS program, this study was limited in scope and budget. The selected plan is a conceptual-level design on which the construction cost is based. The engineering analyses were performed using available LiDAR and soil data as collection of detailed survey and soil data was not in the scope of this study. A full structural analysis of culvert pipes was not in the scope and was therefore not performed. Any differences in the terrain, soil properties, or design will result in a risk of cost increases. The presence of any contamination or endangered species in the project area will also risk cost increases. The limited scope feasibility study results in the following risks to cost and design changes:

- Elevations from LiDAR only increases uncertainty in modeled stages, resulting in uncertainty of the magnitude of flood management impacts by the design.
- Lack of data on existing culverts and storm sewer system increases uncertainty in modeled stages, resulting in uncertainty of the magnitude of flood management impacts by the design.
- Uncertainty of extent and depth of existing sinkhole in project area.
- Detailed hydraulic modeling with current topography and more detailed channel and culvert features risk revealing hydraulic conditions that will require a design change or the increased cost of erosion protection.
- The presence of contaminants at the project feature locations may result in design changes to avoid contamination or the cost increase to remove it.
- Soil properties differing from local data used may result in design changes including different channel side slopes or select fill requirements.

- A change in culvert pipe design or material may result in a more costly construction method.
- Change in land use may result in increased peak runoff rates and may require a design change.
- Real estate easements, both permanent and temporary for access and construction, may not be easily acquired.
- Permitting of construction within a wetland may be difficult and the permitting agencies will need to approve construction of a project that would result in peak stage increases in other areas.

11.2 Design Process Recommendations

This feasibility-level study was limited in analysis scope. Completion of the following data and detailed analyses are highly recommended during the design process:

- Design-level survey collection, including existing culvert sizes and inverts, utility locations, and adjacent parcel owners
- Collection of flood stage records for model calibration
- A Phase I ESA
- Updated topographical/LiDAR survey
- Updated modeling to verify benefits
- Soil sampling and analysis in project areas
- Updated slope-stability analysis in project areas
- Construction sequence

12 REFERENCES

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13 SIMULATION TOOLS

HEC-RAS Version 6.0

ATTACHMENT 1

ATTACHMENT 2

Marsha Durden

4

From: LaWanda Pemberton
Sent: Tuesday, March 28, 2023 10:31 AM
To: Marsha Durden
Subject: Fwd: Granger Rd Bridge

Will you please make sure all emails are printed for tonight ?

Sent from my iPhone

Begin forwarded message:

> **From:** Pam Feagle <pfeagle@taylorcountygov.com>
> **Date:** March 28, 2023 at 9:37:44 AM EDT
> **To:** LaWanda Pemberton <lpemberton@taylorcountygov.com>
> **Subject: Fwd: Granger Rd Bridge**
>
> Pls print and read tonight
>
> Sent from my iPhone
>
> Begin forwarded message:
>
> > **From:** Pam Feagle <pfeagle@taylorcountygov.com>
> > **Date:** March 27, 2023 at 8:09:05 PM EDT
> > **To:** Michael Woodruff <mswderby@gmail.com>
> > **Subject: Re: Granger Rd Bridge**
> >
> > Thank you for your input.
> > Pam Feagle
> > Co Com Dist 4
> >
> > Sent from my iPhone
> >
> > On Mar 27, 2023, at 6:12 PM, Michael Woodruff <mswderby@gmail.com> wrote:
> >
> > Dear Commissioners,
> >
> > First, I would like to thank you for your public service in efforts to better our community and county. I am Michael Woodruff located at 305 Granger Dr where I **purchased my home in 2005**. I would like to comment and hopefully clarify some statements that I heard regarding the water levels in the canal. My house is

located at the **end of the canal** that happens to have several springs that feed the canal along with the tides. Based on the last 20 years, I would describe the canal as having enough water, probably 95% of the time during the year to navigate a 25 ft boat, however the wood bridge prohibits boat access to the river. **I am in favor of a bridge that would allow boat access for canal owners or removing the bridge entirely.**

Thank you for your time and work on this matter.

Respectfully,

Michael Woodruff

--
Michael Woodruff
1997 Sadler Road
Unit 16713
Fernandina Beach, Fl. 32035
c 229.561.7000
f 904.512.0154

Marsha Durden

From: Mike W <mike095@gmail.com>
Sent: Monday, March 27, 2023 3:39 PM
To: Jamie English; Jim Moody; LaWanda Pemberton; Pam Feagle; Michael Newman; Marsha Durden; Thomas Demps
Subject: Granger Bridge

Hi,

We are Mike and Stacy Whitaker and we have a house on 324 Peninsula Rd. We want to first thank you for all the hard work you did to secure the grant for the New Granger Bridge. It would be a great improvement to our community to allow all of the residents on the canal, which are 29 property owners, safer access to the river. I understand there are a few people who oppose the bridge. Those are also the same people in the news article from 2019 that asked for a new bridge when Taylor County was going to remove it. We are not in favor of forming an HOA or deeding the bridge to a resident so they can have complete control of it. This would cause problems in the future and create financial demands on residents. We are willing to compromise and take the bridge out as it has been condemned for over 3 years and is not safe to either go over or under it. Removal of the bridge will also have the least impact to the environment and tax payers money as some residents have voiced their concern over.

Again we appreciate the hard work you have put into trying to help our community.

Mike and Stacy Whitaker

Marsha Durden

From: Mike W <mike095@gmail.com>
Sent: Monday, March 27, 2023 4:13 PM
To: Jamie English; Jim Moody; LaWanda Pemberton; Pam Feagle; Michael Newman; Marsha Durden; Thomas Demps
Subject: Letters to be read at tomorrows meeting
Attachments: Granger Bridge.pdf

Attached is a file with letters from property owners on Granger and Peninsula Rd.
We would like these letters read at the County Commissioners Workshop tomorrow evening.

Thank you!
Mike Whitaker

Hi,
We are Mike and Stacy Whitaker and we have a house on 324 Peninsula Rd. We want to first thank you for all the hard work you did to secure the grant for the New Granger Bridge. It would be a great improvement to our community to allow all of the residents on the canal, which are 29 property owners, safer access to the river. I understand there are a few people who oppose the bridge. Those are also the same people in the news article from 2019 that asked for a new bridge when Taylor County was going to remove it. We are not in favor of forming an HOA or deeding the bridge to a resident so they can have complete control of it. This would cause problems in the future and create financial demands on residents. We are willing to compromise and take the bridge out as it has been condemned for over 3 years and is not safe to either go over or under it. Removal of the bridge will also have the least impact to the environment and tax payers money as some residents have voiced their concern over.

Again we appreciate the hard work you have put into trying to help our community.

Mike and Stacy Whitaker

Taylor County Commissioners,

We are home owners at 322 Granger Rd (Riverside) and this property has been in our family since 1989. It has come to our attention that there are several people opposing the new bridge. We see nothing wrong with this project as it would better the community and allow safer access for the residents on the canal. It has also come to our attention that several residents are trying to form an HOA or deed the bridge into their name so they can gain control of it. We do not want the community to have this financial responsibility and liability for the future. The simplest and lowest cost solution is to remove the bridge as it has been condemned for over 3 years. This still allows everyone to access their property, eliminate the unsafe bridge, and the canal residents will gain safer water access.

Thank you for taking the time to listen to our concerns!

Harold and Melody Thomas

Hal Thomas

Melody L. Thomas

Edith Cooey
309 Peninsula Rd SE
Steinhatchee, FL

Dear Commissioners,

I would like to address the situation with the Granger Bridge. I live on the canal. We greatly support the installation of the new bridge or simply removing it. We frequently use our small skiff to navigate the canal out to the river. The bridge has been a hazard to the community due to its dilapidated structure and low design.

We DO NOT want a homeowners association. This would potentially have a great financial impact on all of the community in the future, leaving us open to different financial obligations and restrictions on our properties. This is not necessary due to the grant money awarded to the county to have DOT build the new bridge.

As a native of Steinhatchee, I know that this town was not built on rules and regulations. It saddens me that several of our neighbors do not see the benefit of this project to the whole community and are only thinking of themselves. We are all neighbors and friends. These waterways are a gift to all of us from God.

Thank you for your efforts in trying to help our community.

Sincerely,

Edith Cooey

Edith Cooey

Dear Taylor County Commissioners,

We are aware of the grant that was received for the construction of the new bridge. We would rather just see the old bridge removed as it has been deemed unsafe and closed for 4 years. It is not necessary and we do not want to see an HOA formed or any individuals taking ownership of the bridge.

We have owned our house on the Steinhatchee River since 1988. Simply removing the old bridge would preserve the natural beauty of the community and have no environmental impact to the area.

Sincerely,

Dan & Sarah Rich
318 Granger Rd
Steinhatchee, FL

Dear County Commissioners,

We are writing this letter to voice our concerns regarding the Granger Drive Bridge.

It has come to our attention that a couple of our neighbors want to form an HOA or LLC to fund the bridge and maintain it.

We are not in favor of this action. We have been told that the DOT has acquired a grant to rebuild the bridge so our neighbors on the canal would have better access to the main river. We would like to see the bridge built higher for this purpose or remove it all together and put barricades up.

We have four generations of family who come throughout the year to enjoy the beauty and peacefulness of Steinhatchee. We are in our eighties now and plan to pass it down to family to be used for many years to come. We do not want to pass down another expense to our family due to an HOA. The cost of maintaining a home near the gulf, plus a sea wall and boat house can be very expensive.

We respectfully hope that you will consider our objections in this matter.

Sincerely,

Wayne and Nancy Thomas

316 Granger Dr.

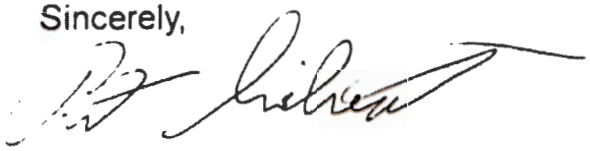
Steinhatchee, Fl 32359

Nancy K Thomas

Dear Taylor County Commissioners,

As a property owner on Peninsula Rd and having access to the canal I support the construction of the new bridge or complete removal of the bridge on Granger Dr. As commissioners, you fought hard for this grant so a new, structurally sound, bridge could be constructed for the community. We are more than grateful for your efforts in pursing this and being awarded the grant. I am now aware that there are some who oppose this and want to form an HOA to control the bridge themselves. I am strongly against this! Taylor County and the DOT should maintain control of this bridge.

Sincerely,



Art Gilreath

Marsha Durden

From: Mike W <mike095@gmail.com>
Sent: Monday, March 27, 2023 9:10 PM
To: Jamie English; Jim Moody; LaWanda Pemberton; Pam Feagle; Michael Newman; Marsha Durden; Thomas Demps
Subject: Granger Bridge- Second set of letters to be read tomorrow
Attachments: Granger Bridge-2.pdf

Attached is another group of letters from residents that need to be read at the Commissioners meeting tomorrow 3/28/23

Thanks!
Mike Whitaker

Dear Taylor county commissioners,

Once again I am writing to you in support of the grant to replace the condemned bridge on Granger road.

In it's current state, the bridge is hazardous and the FDOT plan would rectify this problem.

Also, an HOA to fund the bridge is totally absurd. Especially, when there is a grant.

I believe that the general consensus among everyone, either for or against the bridge, is that a compromise would be to tear down the bridge and
have no bridge.

Thank you for your time,

Joe Johnson

Dear County Commissioners,

We are one half of the owners of 313 Peninsula Drive. It has come to our attention that a property owner near the end of the canal just past the bridge in question wishes to put the bridge in an LLC and form an HOA. Allowing a public thoroughfare to be controlled by an LLC is not only a terrible idea, but shuts out any meaningful input by the residents of the neighboring properties. We bought the lot with the property on Peninsula knowing that a new bridge was coming, and in turn would benefit those owners and users of the canals with access to the river by small boat traffic. By allowing one or two to have control over access to the river, sets a bad precedent and does not serve the needs and wishes of the majority, but the wishes of the few. The grant to replace the bridge is an asset for the Community of Steinhatchee and should be valued and used as awarded. How many more grants will be awarded if they are not used?

Kelly & Pamela Kuhn
229-563-0878

My husband Kelly Kuhn sent an email on behalf of both of us and we strongly oppose the county allowing the bridge to be put into an LLC or HOA. We feel that this will hurt our property values if the bridge is not torn down or replaced. It would make the most sense to use the grant for the intent it was applied for. Thank you again for your time.

Pamela Kuhn
JK Investment Properties
313 Peninsula Dr.

March 27, 2023

Dear To Whom It May Concern,

In August 2022, my family and I purchased a lot on Peninsula Drive off of Granger Drive. We had searched for almost 2 years for the perfect lot for a vacation spot, but also as an investment property. We were so excited to find this location as we are avid kayakers and anglers. We love that this lot has access to the Steinhatchee River. Since purchasing the property, we have kayaked from our property to the river several times. To access the river, we kayak under the Granger Bridge. Due to the low clearance of the bridge, we have to crouch down under the bridge.

My family and I were very excited to hear about the grant that was received to remove the existing bridge and to build a new bigger one. Not only would a bigger bridge allow easier access to the river, it would also increase our property value and attract potential renters, which helps tourism in Steinhatchee.

The thought of the existing bridge being made smaller and privately owned is very disheartening to my family and I. When we purchased the property, we dreamed of many days kayaking to the river. A smaller, privately owned bridge would completely take away that dream.

We would like for you to continue to consider the original plan of building a bigger bridge or not replacing it at all.

Thank you for your time and consideration,

Melissa Johnson

Melissa Johnson
229-506-0834

My property is on 313 Peninsula Dr. I recently purchased, cleared land and now adding sewer, water and electricity. When I bought it, I was hoping the Grander bridge would be rebuilt in the future. I recently read the proposal for the new bridge and was very excited. Getting a kayak with small kids under this bridge is quite dangerous. Forget driving even a small boat under it. Almost a month later, I hear from the grapevine that a single person is trying to stop the build for their own reasons. I'm confused about what is actually going on. I have not been officially notified of this proposal. I hear that an LLC or HOA is what this one person is proposing. I do not know how this would work and I'm not interested. Let's keep the original plan and or take the bridge down. From what I hear it's a hazard anyway. Thank you for letting me and my family express our opinion.

Sean Johnson

Marsha Durden

From: LaWanda Pemberton
Sent: Tuesday, March 28, 2023 10:33 AM
To: Marsha Durden
Subject: Fwd: Granger Bridge

Please print

Sent from my iPhone

Begin forwarded message:

> **From:** Marti Allen <marti0523@outlook.com>
> **Date:** March 22, 2023 at 2:22:28 PM EDT
> **To:** Jamie English <jenglish@taylorcountygov.com>, Jim Moody <jmoody@taylorcountygov.com>, Michael Newman <mnewman@taylorcountygov.com>, Pam Feagle <pfeagle@taylorcountygov.com>, Thomas Demps <tdemps@taylorcountygov.com>, LaWanda Pemberton <lpemberton@taylorcountygov.com>
> **Subject: Granger Bridge**
>
> Good Afternoon,
>
> We are following up regarding Granger Bridge. We have received information that there is a proposal of forming a LLC or HOA to take over control of the bridge. We are not in favor of this proposal. We are in support of taking the bridge down or raising the bridge. We own property on the canal on Peninsula Rd. and would like to be able to access the River by boat. This is something we can only do on low tide currently due to the height of the bridge. When we bought in 2019, we were told by the realtor that the bridge would be rebuilt/raised or removed. It is our understanding that the funds are available.
>
> Respectfully,
> John and Marti Allen
> 863-669-5462 or 863-602-1301

Marsha Durden

From: LaWanda Pemberton
Sent: Tuesday, March 28, 2023 10:32 AM
To: Marsha Durden
Subject: Fwd: New bridge proposal

Please print

Sent from my iPhone

Begin forwarded message:

> **From:** Pam Feagle <pfeagle@taylorcountygov.com>
> **Date:** March 28, 2023 at 9:36:32 AM EDT
> **To:** LaWanda Pemberton <lpemberton@taylorcountygov.com>
> **Subject: Fwd: New bridge proposal**
>
> Pls print and read tonight
>
> Sent from my iPhone
>
> Begin forwarded message:
>
> > **From:** sean johnson <seanjohnson770@gmail.com>
> > **Date:** March 27, 2023 at 8:17:02 PM EDT
> > **To:** jenglish@taylorcounty.gov.com, Jim Moody <jmoody@taylorcountygov.com>, Michael Newman <mnewman@taylorcountygov.com>, Pam Feagle <pfeagle@taylorcountygov.com>, Thomas Demps <tdemps@taylorcountygov.com>
> > **Subject: New bridge proposal**
> >
> > To the Steinhatchee commissioners
> >
> > I purchased land on Peninsula road last year. My family and I have cleared out land and are adding water, sewer and electricity in the coming months. We bought this land to mostly kayak the waterways into the Steinhatchee river. Going under the bridge is quite a feat especially when the tide is high. Very scary to do with small children with you. To our surprise we heard that Steinhatchee was getting a federal grant to rebuild the bridge. This was great news and everything was falling into place. However, I have been hearing very recently from sources that a single entity was trying to stop the build of the bridge and wanted to put the bridge in their name and or create an LLC and HOA. These actions may make perfect sense to this one person, but not to many others. Who is going to pay for this bridge once it goes into an HOA? What if repairs are needed? When will it be built? What if there is an accident on the bridge? Is this one person going to pay for this or will he make everyone in the HOA responsible? Another option would be to remove the bridge completely and not

to replace it. That would definitely cost less. I would also think that a clear water way would help everyone's property value to increase. Thank you for listening and I hope you make the right decision.

Marsha Durden

From: LaWanda Pemberton
Sent: Tuesday, March 28, 2023 10:31 AM
To: Marsha Durden
Subject: Fwd:

Please print for me

Sent from my iPhone

Begin forwarded message:

> **From:** Pam Feagle <pfeagle@taylorcountygov.com>
> **Date:** March 28, 2023 at 9:37:20 AM EDT
> **To:** LaWanda Pemberton <lpemberton@taylorcountygov.com>
> **Subject: Fwd:**
>
> Pls print and read tonight
>
> Sent from my iPhone
>
> Begin forwarded message:
>
> > **From:** Pam Feagle <pfeagle@taylorcountygov.com>
> > **Date:** March 27, 2023 at 8:07:36 PM EDT
> > **To:** Melissa Johnson <johnson.all4kids@gmail.com>
> > **Subject: Re:**
> >
> > Thank you for your input.
> > Pam Feagle
> > Co Commissioner Dist 4
> >
> > Sent from my iPhone
> >
> > > On Mar 27, 2023, at 7:37 PM, Melissa Johnson <johnson.all4kids@gmail.com> wrote:
> > >
> > > Dear Taylor County Commissioners,
> > >
> > > After 2 years of searching for the perfect property for both vacation and investment, my family and I purchased a lot on Peninsula Drive in August 2022. We are avid kayakers and anglers and were so excited to find this location because of the access to the Steinhatchee River.

We were very excited to hear about Steinhatchee receiving the federal grant to remove the existing bridge and to build a bigger one. The bigger bridge would allow easier access to the river, increase our property value, and attract renters searching for river access.

The proposal of the existing bridge being made smaller and privately owned, as well as introduction of a HOA, is very disheartening to my family and I. Not only would this plan take away our access to the river, it would also decrease our property value, and decrease potential renters, which can in turn hurt tourism in Steinhatchee.

We urge you to continue to consider the original plan of building a bigger bridge or not replacing it at all.

Thank you for your time and consideration,
Melissa Johnson 229-506-0834
Itinerant Teacher of the Visually Impaired and Deaf/Hard of Hearing
Serving Valdosta City Schools, Lowndes County Schools, and Scintilla Charter Academy

Marsha Durden

From: LaWanda Pemberton
Sent: Tuesday, March 28, 2023 1:57 PM
To: Marsha Durden
Subject: FW: Friends, please stand with us to save our important wood bridge today!

From: john dickert <johnw512@yahoo.com>
Sent: Tuesday, March 28, 2023 1:56 PM
To: Jamie English <jenglish@taylorcountygov.com>; Thomas Demps <tdemps@taylorcountygov.com>; Pam Feagle <pfeagle@taylorcountygov.com>; Michael Newman <mnewman@taylorcountygov.com>; Jim Moody <jmoody@taylorcountygov.com>
Cc: LaWanda Pemberton <LPemberton@taylorcountygov.com>
Subject: Friends, please stand with us to save our important wood bridge today!

Dear Friends:

John and I thank you for hearing our deep concerns re our beloved Granger Bridge. We pray all dedicated Board members will help ensure our wood bridge is protected and improved
for the enjoyment of all Steinhatchee residents who enjoy daily walks over our beloved wood bridge located within beautiful woodlands which also deserve your protection! Our home on Granger
was built by John's father over 60 yrs. ago on a little piece of land he bought from Mr. Granger who developed Granger Subdivision.

Folks on Granger - indeed, our whole Steinhatchee Community, has stood strong each time a few tried to have our beloved little Granger Wood Bridge torn out- as this beautifully-designed and strongly
constructed bridge with it's huge undergirding timbers fits perfectly into one of Florida's most beloved walking trails which many in Steinhatchee traverse daily--and, despite all this Board's
recent changes to that little bridge, it's still loved and used daily now, as a walking bridge.

When your Board turned it into a pedestrian/golf cart bridge, we discovered we loved it even more, as did our Community. Granger residents have benefited by less truck traffic, fewer thefts, less dust--and our small Granger neighborhood is more peaceful-----UNTIL FDOT suddenly appeared to unveil a ridiculously " **TALL"** cement bridge plan!

Obviously, FDOT didn't do their research--as our **SHALLOW, SHORT** Granger Canal, which abruptly ends at Granger Rd. is **TIDAL--**meaning, twice daily, the tide comes in, then goes out--
which is WHY one rarely sees big boats in narrow Granger Canal --unless it's docked at a home on either end of that little canal. **As it is impossible for big boats to exit that
very shallow TIDAL canal at low tide, which occurs twice daily--and is a strong factor FDOT failed to take into consideration-- while spending loads of tax payer money designing
a TALL bridge which may be a good fit someplace --but not in our neighborhood.**

Mr. Granger dug his little drainage canal which works well to prevent excess flooding during frequent storms and extremely high tides! **But, his little canal was never, ever intended to**

be a "TALL" boat thoroughfare. AND, IF FDOT officials had spent one hr. talking with folks on Granger--or if our BOCC had held a hearing for FDOT to present their ideas with Granger residents, some
of whom have designed bridges, I doubt FDOT would've proposed building a preposterously TALL bridge which would require tree removal and disrupt the lives of elderly residents who live by the bridge while
blocking some homes for a year or more! WHY, we all wonder, were Granger residents not allowed input earlier--before so much money was wasted on a poor design?

If you met our elderly neighbors who live beside our wood bridge, you'd see some are disabled, yet they're still able to enjoy little daily walks across our small wood bridge they love! To rip out our neighborhood's beloved little wood bridge -and replace it with a TALL cement bridge many could not traverse uphill would be a terrible idea I'm sure you'll all agree!

There are a million other reasons FDOT's design is WRONG for our beautiful natural wetlands--, but I have neither time nor space to list them all here. But, I am sure others will clarify them
at tonight's hearing--**which, to us, is a hearing to save our beloved little wood bridge so it can be stabilized and safely utilized as a safe Pedestrian/Golf Cart Bridge.** There are
excellent examples of wonderful woodland walking bridges on trails all over N. FL which we hope our County Engineer and Commissioners will visit prior to final restoration of Granger Bridge.

The slight curve on Granger Bridge is perfect for walkers of all ages to traverse. Raising the bride any higher-- or increasing its curve would just make it harder for neighbors with disabilities to traverse,
so PLEASE hear our concerns and allow us to participate in any future decisions or changes to our beloved Granger Bridge and to our neighborhood. Don't let Granger residents be the last to know what's
being planned for our own neighborhood, please!!

It is deeply troubling when actions are taken re our neighborhood without our knowledge nor consent! My Engineer husband, John, quietly observed and felt good about the nice restoration work our own
County Engineer and his hardworking team were accomplishing on Granger Bridge --until they were suddenly stopped. But, now, with your good decision-making, we hope our own County crew will be allowed to
finally complete the good work they began. And, we join our Granger neighbors in hoping that work in strengthening our little walking bridge will commence very soon!

John and I thank you for your hard work, for hearing our deep concerns--and, most of all, for acting in the best interest of those most affected by your decisions!

Sincerely,
Gale and John Dickert
Residents, Granger Road
850-838-5451-cell

5

TAYLOR COUNTY BOARD OF COMMISSIONERS

County Commission Agenda Item

SUBJECT/TITLE:	**THE BOARD TO DISCUSS REQUESTS FOR PURCHASE OF COUNTY PROPERTY.**
MEETING DATE REQUESTED:	**3/28/2023**

Statement of Issue: TO REQUEST GUIDANCE REGARDING REQUESTS FOR PURCHASE OF COUNTY PROPERTY.

Recommended Action: NOT CONSIDER THE PURCHASE OF COUNTY PROPERTY UNTIL COMPLETION OF INVENTORY REPORT.

Fiscal Impact: UNKNOWN AT THIS TIME

Budgeted Expense: N/A

Submitted By: LAWANDA PEMBERTON, COUNTY ADMINISTRATOR

Contact: 850-838-3500 EXT 6

SUPPLEMENTAL MATERIAL / ISSUE ANALYSIS

History, Facts & Issues: COUNTY STAFF IS RECEIVING REQUESTS FOR CONSIDERATION FOR SALE OF COUNTY PROPERTIES. THE COUNTY ADMINISTRATOR WOULD REQUEST THE BOARD TO NOT CONSIDER PROPERTY SALES UNTIL AN INVENTORY OF COUNTY PROPERTY AND ANY CONSIDERATION OF PROPERTIES THAT ARE CONSIDERED APPROPRIATE FOR USE AS AFFORDABLE HOUSING IS COMPLETE.

THE COUNTY ADMINISTRATOR'S OFFICE IS ASSEMBLING A LIST OF COUNTY OWNED PROPERTIES WHICH SHOULD BE COMPLETE IN THE COMING MONTHS.

Options:

Attachments: FLORIDA STATE STATUTE 125.379

25.379 Disposition of county property for affordable housing.—

(1) By July 1, 2007, and every 3 years thereafter, each county shall prepare an inventory list of all real property within its jurisdiction to which the county holds fee simple title that is appropriate for use as affordable housing. The inventory list must include the address and legal description of each such real property and specify whether the property is vacant or improved. The governing body of the county must review the inventory list at a public hearing and may revise it at the conclusion of the public hearing. The governing body of the county shall adopt a resolution that includes an inventory list of such property following the public hearing.

(2) The properties identified as appropriate for use as affordable housing on the inventory list adopted by the county may be offered for sale and the proceeds used to purchase land for the development of affordable housing or to increase the local government fund earmarked for affordable housing, or may be sold with a restriction that requires the development of the property as permanent affordable housing, or may be donated to a nonprofit housing organization for the construction of permanent affordable housing. Alternatively, the county may otherwise make the property available for use for the production and preservation of permanent affordable housing. For purposes of this section, the term "affordable" has the same meaning as in s. 420.0004(3).

History.—s. 1, ch. 2006-69.

Potential roads we discusse

Fish Creek to Roll-off site R
13110 feet/2.55 miles
Dekle Beach to Roll-off site
16746 feet/3.17 miles
Steinhatchee- - Roy's to Ro
site Rd. 8871 feet/1.68 mile
1st Ave. Riverside to 51. 621
1.2 miles
10th Street. 1447 feet/ .3 mi
Carlton to Hwy 27. 23750 fe
miles
Old Dixie; Landry to CR30. !

7

TAYLOR COUNTY BOARD OF COMMISSIONERS

County Commission Agenda Item

SUBJECT/TITLE:	**THE BOARD TO DISCUSS DRAFT AMENDED SALARY SCHEDULE**
MEETING DATE REQUESTED:	**3/28/2023**

Statement of Issue: TO AMEND SALARY SCHEDULE TO ACCOUNT FOR REVISED STARTING SALARIES.

Recommended Action:

Fiscal Impact: N/A

Budgeted Expense: N/A

Submitted By: LAWANDA PEMBERTON, COUNTY ADMINISTRATOR

Contact: 850-838-3500 EXT 6

SUPPLEMENTAL MATERIAL / ISSUE ANALYSIS

History, Facts & Issues: SINCE THE APPROVAL OF THE ORIGINAL SALARY SCHEDULE THE STARTING SALARIES FOR NUMEROUS PAY GRADES HAS CHANGED. THE COUNTY ADMINISTRATOR REQUESTS APPROVAL OF REVISED SCHEDULE THAT CORRECTS THE MINIMUM, MIDPOINT AND MAXIMUM SALARIES.

Options:

Attachments: SALARY SCHEDULE
AMENDED SALARY SCHEDULE

PAY CLASSIFICATION

STUDY

Taylor County BOCC

2014

Cody & Associates, Inc.

MANAGEMENT CONSULTANTS

305 Jack Drive, Cocoa Beach, Florida 32931

(321) 783-3720; FAX (321) 783-4353

E-mail: CodyAssociates@aol.com

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MANAGEMENT CONSULTANTS
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July 31, 2014

Marcella F. Bridier, HR Director
Taylor County
201 E. Green Street
Perry, Florida 32347

Dear Ms. Bridier:

We have completed our assignment and are submitting the draft report of our **Pay Classification Study** for all full time positions in the service of the BOCC.

This report has been prepared as an accounting of our assignment and to record our approach. The recommendations and comments in the report reflect our objective appraisal based on analysis and discussion to the extent possible within the scope of the assignment.

Our objective was to develop a Compensation Plan Study that is equitable to both the employees and to the County.

We appreciate this opportunity to be of service to you and express our thanks for the cooperation and courtesy which was extended to us by all of your employees during the Study.

Respectfully submitted,

N. E. Pellegrino
Principal Partner

PAY CLASSIFICATION STUDY

Taylor County

Table of Contents

Section **Page**

INTRODUCTION

This report, on the Study of the Salaries for Taylor County BOCC, contains details of all elements of the Study. In preparing this report, *Cody & Associates, Inc.* has used its best efforts and has taken reasonable care. To an extent, the Report relies on information and data received from third parties in whom *Cody & Associates, Inc.* has assumed the accuracy and completeness thereof.

Cody & Associates, Inc. cannot guarantee that any particular result will follow from any action taken on the basis of this Report. The information and opinions expressed in this Report have significance only within the context of the entire Report. No parts of this report should be used or relied upon outside of that context.

This Study is not an end in itself, but a vital element in a sound management program for the County. A good overall management system requires continuous work and polishing, once the plan is implemented.

Adjustments will continually have to be made to reflect changes in the labor market place in order to maintain a current and equitable compensation system and pay plan.

I

STUDY ASSIGNMENT AND OBJECTIVES

Taylor County, Florida, retained the services of *Cody & Associates, Inc.* to conduct a Pay Classification Study for all full time positions under their jurisdiction.

In our approach to establishing a Pay Plan, we were concerned with the following basic objectives:

A. Formulating a Pay Plan that will assist in reducing turnover costs and promote careers with the County.

B. Designing a Pay Plan that will attract qualified personnel to render the services that the County provides.

C. Establishing salary ranges, and determining individual salary levels.

D. Establishing equitable relationships of one job to another within the work force (equal pay for equal work).

E. To ensure fair and equal compensation opportunities for equal contributions to the effective operations of the County.

F. Designing current Salary Ranges which are competitive with reasonably similar positions in the labor market where the County recruits for employees and which

are consistent with the economic conditions in Taylor County.

G. Establishing or maintaining normal lines of promotion to and from the various classes of positions in the Personnel System.

To achieve these objectives, we divided the assignment into four (4) major segments:

A. Position Review
B. Wage Survey
C. Methods of Implementing Survey Results and Recommendations
D. Report Preparation and Presentation

II

POSITION REVIEW PHASE

The Position Review Phase of the Study included the following:

A. REVIEW OF POSITIONS

The objective of this phase was to review information about the BOCC's full time positions and provide a factual basis for using the positions in a comprehensive salary survey and job matching process.

1. JOB DESCRIPTIONS & POSITION DESCRIPTION QUESTIONNAIRES

   a. Job descriptions along with the position description questionnaires were analyzed by the consultant to help determine proper placement in the pay structure.

   b. Develop benchmark positions for use in the salary survey.

2. COLLECTION OF OTHER INFORMATION

   We compiled information such as:

   a. Current organization and staffing charts.
   b. Personnel policies, rules and regulations.
   c. Other pertinent procedures and data.

III

SALARY PHASE

The Salary Phase of the Study included the following:

A. SALARY SURVEY

The objective of this survey was to determine what must be provided in terms of salaries in order to obtain or retain personnel; in other words, to be competitive with other employers recruiting from the same labor market. The steps included:

1. SELECTION OF SURVEY CLASSES (Bench Marks)

   We utilized as many as possible of the present classes in the salary survey in order to get the best possible data. These benchmark jobs represented all of the occupations and levels in the County's organization and those occupations which could be compared with other employers.

2. IDENTIFICATION OF LABOR MARKET

   The relevant labor market to be surveyed was identified as the local operating area of Taylor County. These agencies included: Counties of: Gadsden, Gulf, Jackson, Madison, Wakulla, Washington, and the cities of Chipley, Quincy, Perry, and Marianna.

   We also used data in our database as a guide which included comparable positions statewide and in the panhandle.

3. SURVEY METHOD

In compiling this data, we obtained from the designated agencies their minimum and maximum salaries of positions in each classification. If this data was not available we utilized the actual salary being paid.

Another step we use in our calculations, in order to provide the most accurate data possible, is to apply the standard deviation principle. The standard deviation is the most commonly used indicator of variability of a distribution of data. The usual and most accepted interpretation is in terms of the percentage of cases included within one standard deviation below the mean to one standard deviation above the mean. This range on the scale includes about two-thirds ($^2/_3$) of the cases in the distribution. Data was entered into our database and then edited to ensure that the data was reasonable and representative and had been accurately reported and recorded. Responses were eliminated when they appeared atypical or exhibited extreme values in wages.

In matching Taylor County's benchmark positions to others in the survey marketplace we concentrated on similar job functions, type of authority, and responsibilities and skill sets needed to do the job. Over the years *Cody & Associates, Inc.* has completed compensation studies for almost all the agencies used in the survey group which made matching jobs more equitable.

B. *DEVELOPMENT OF THE SALARY SCHEDULES*

The objective of this aspect of the Study was to compile the results of the salary survey and to design appropriate salary schedules and plans for all the positions covered.

C. *GENERAL SALARY FINDINGS AND COMMENTS*

We found approximately 25% of all the fulltime employees' current salaries were below the recommended minimums of the recommended salary ranges of their positions, and most of the maximums were below the recommended salary maximums. We found none of the County's employees were paid over the market level maximums in our survey.

A complete list of the recommendations can be found in Enclosure **1, 2** and **3**. It should be noted even with the recommended new range for the firefighter EMT the County will still be trailing the City of Perry and may still experience retention problems in this classification.

Part time, seasonal, and on-call position salary rates will be determined by the County Administrator.

D. *RECOMMENDATIONS*

1. Adopt the recommended salary ranges and schedules as submitted in this report, when it is economically feasible to do so (Enclosures 1, **2** and **3**).

2. *Cody & Associates, Inc.* will assist the County further in the implementation process, as requested.

IV

COMPENSATION PLAN

A. *PURPOSE*

The Compensation Plan is intended to provide all employees with an equitable and competitive pay, relative to pay received by other employees performing similar work in other areas of the County's organization and relative to rates received by other employees in the labor market from which the County employees are recruited.

The Compensation Plan includes the basic Salary Schedule and the schedule of salary ranges for all classes of positions included in the Classification Plan.

B. *COMPENSATION PLAN DESIGN*

At the present time the County is using a step plan salary schedule. We are recommending the County adopt the Minimum to Maximum pay plan structure.

This is the most flexible system in use today, especially in the public sector. Some of the advantages in this type of structure are:

1. The employer is not limited to the rigid intervals between steps when considering salary increases, as is the case when a step pay plan is used.

2. The employee can usually be compensated by whatever percentage increase, based upon job performance, the employer desires.

3. The Minimum-Maximum Plan provides more flexibility when ability to fund is a problem.

4. The Minimum-Maximum Plan is easier to administer and understand.

C. APPOINTMENT AND STARTING RATE GUIDELINES

1. The minimum rate for a position is the appointment (in-hiring) rate for a new employee. This rate reflects the "market place" value of the position based upon the minimum qualifications needed to perform the work. We are recommending the County adopt the minimums proposed as a result of our Study and that these minimums be used as the appointment rates. However, more latitude and flexibility must be exercised when determining actual in-hiring rates for applicants **in hard to fill critical or managerial positions** since experience and availability are key factors.

2. Generally, appointments below or above the minimum salary may be authorized in the following situations:

   a. If the applicants training, experience or other qualifications are above those required for the position appointments may be approved by the County Administrator on a case by case basis, at a rate of up to the mid-point of the range established for the position.

   b. Appointments below the minimum salary can be handled as described in Section H.

D. SALARY RANGES AND PROGRESSION

1. The Pay Plan consists of a Salary Schedule containing salary ranges, the compensation attached to the ranges, and a schedule listing the assignments of each class in the Classification Plan to a range in the Salary Schedule.

2. Employees can receive a salary increase by one or more of the following ways: performance salary advancement; across-the-board increase; cost of living; adjustments; promotion; reclassification; or pay range adjustment.

3. Salary ranges are used to develop incentives among employees to improve their work performance and quality. In the present climate of fiscal concerns it is essential to have some type of salary program geared to improving overall productivity and efficiency of work.

E. PERFORMANCE (PRODUCTIVITY) INCREASES

1. An increase within the same pay range should not be automatic, but should be based upon a Performance Evaluation System or other system that measures an individual's effort and effectiveness.

2. An employee should be eligible for salary advancement annually on an anniversary or a fiscal year basis and as warranted by performance, provided there are funds available for the increases.

3. Salary advancement to the mid-point of the salary range is considered as

the developmental phase of the salary progression. Increases to this point are usually more rapid than after the mid-point is reached.

The developmental phase includes the probationary period and signifies the time an individual should become totally effective and productive according to the established County standards and/or desires.

The area beyond the mid-point of the salary range is referred to as the incentive phase. Movement in this phase of the range should be reserved for performance over and above which is considered as an average, acceptable job. This area should be based truly on performance.

F. PAY GRADE ADJUSTMENT

1. Where the pay range of an existing classification is raised, it is important to maintain established pay relationships and pay spreads within a work unit and not unduly compress pay between new and longer service employees.

2. In instances where the total pay plan is being revised, adjustments and implementation should be determined at that time, which will consider cost impact and other factors.

G. RECLASSIFICATION/ORGANIZATIONAL CHANGES

When a position is reclassified to a higher class, adjustments to salary should be handled in the same manner as Promotion.

When a reclassification results in assignment to a lower class, adjustment should be made in accordance with the rules for Demotion.

H. TRAINEE CATEGORY

If an applicant for a position does not meet the minimum qualifications, but is otherwise qualified for the position, the department head may request the appointment as a "TRAINEE". In such cases, the employee could be hired at a rate of ten to fifteen percent (10%-15%) below the minimum salary, until the minimum qualifications have been satisfied.

The individual's probationary period should not begin until he/she has completed the trainee period.

This category is used to train people on-the-job who have the potential to do the work, but lack some of the skills or experience needed. The normal time a person remains in a trainee category would be a minimum of six (6) months and a maximum of twenty-four (24) months. This time period would depend upon the skills or experience needed in individual cases and when certification requirements are completed.

I. SPECIAL ASSIGNMENT CATEGORY (SAC)

This category can be used when an individual in a position is given an assignment(s) which encompasses duties and responsibilities of a different, advanced, and/or supervisory nature. These assignments are usually for a specified limited period of time. This type assignment is of a temporary nature, can be rescinded unilaterally by the County, and does not constitute a promotion. All assignments which extend beyond 30 work days must be approved by the County Administrator. A pay supplement may be given for that period of time.

J. POST-MAXIMUM INCENTIVE

The maximums of the recommended pay ranges are the point where an employee's pay progression usually stops. This marks the place where the "worth" of the position, according to the market place and comparable jobs, has reached its limit. However, many agencies feel some type of pay incentive past this maximum point is necessary to continue the productivity of the individual at an acceptable level. We feel there is some merit to this practice and have seen most agencies in the survey sampled, utilizing some forms of an incentive.

We are recommending a valid performance adjustment program for your consideration and implementation.

When the individual has reached the maximum of the pay range, he/she will be eligible for a performance type adjustment. This adjustment would not be added to the individual's base pay. The amount of the adjustment will be determined by the County. This type of arrangement has the effect of not compounding salary or fringe benefit costs and limits the overall short and long-term impact on the County. It also helps in the retention of productive long-term employees. These increases should be based upon performance and considered on an annual basis.

V

IMPLEMENTATION

To implement the proposed Compensation Plan we recommend adjusting the salaries of employees who fall below the minimum in their recommended range to the minimum rate.

Recommended Pay Grade - By Internal Relationship

	Present		Proposed		
	Min	Max	P/G	Min	Max
Custodian	13,104	18,139	110	16,494	23,916
Kennel Tech	13,104	18,139	110	16,494	23,916
Roll Off Attendant	13,104	18,139	110	16,494	23,916
Recycling Tech	16,723	23,148	120	17,319	25,112
Road Maintenance Tech	16,723	23,149	120	17,319	25,112
Secretary (EMS)	17,555	24,301	140	19,094	27,686
Animal Control Officer	19,365	26,805	150	20,049	29,070
HEO I	19,365	26,805	150	20,049	29,070
Mechanic I	18,429	25,510	150	20,049	29,070
Road Maintenance/Sign Tech	19,365	26,805	150	20,049	29,070
Social Services Tech	18,429	25,510	150	20,049	29,070
HEO II	20,322	28,130	160	21,051	30,524
Library Tech II	19,365	26,805	160	21,051	30,524

* Based on 2912 hours annually

Recommended Pay Grade - By Internal Relationship

	Present		Proposed		
	Min	Max	P/G	Min	Max
Board Receptionist	22,422	31,038	170	22,104	32,050
Facility Maintenance	22,422	31,038	170	22,104	32,050
HEO III	21,341	29,541	170	22,104	32,050
Secretary - Extension Services	22,422	31,038	170	22,104	32,050
Secretary (Solid Waste)	21,341	29,541	170	22,104	32,050
Engineering Tech	23,525	32,564	180	23,209	33,653
HEO IV	23,525	32,564	180	23,209	33,653
Building/Planning Tech	21,341	29,541	190	24,369	35,335
Mechanic II	24,710	34,205	190	24,369	35,335
Code Enforcement Officer	21,341	29,541	200	25,588	37,102
Mosquito Control/Animal Control Coordinat	24,710	34,205	200	25,588	37,102
Sports Complex Coordinator	24,710	34,205	200	25,588	37,102
Admin Assistant (Network)	24,710	34,205	210	26,867	38,957

* Based on 2912 hours annually

Recommended Pay Grade - By Internal Relationship

Office Manager	24,710	34,205	210	26,867	38,957
Paraprofessional Librarian	23,525	32,564	210	26,867	38,957
Purchasing Agent	25,938	35,904	210	26,867	38,957
Secretary - Admin and Exe Offices	24,710	34,205	210	26,867	38,957
Team Leader	25,938	35,904	210	26,867	38,957
Veterans Services Officer	24,710	34,205	210	26,867	38,957
Superintendent - PW	25,938	35,904	230	29,621	42,950
Building Inspector	25,938	35,904	250	32,657	47,353
Library Manager	31,533	43,649	250	32,657	47,353
Grants Coordinator	31,533	43,649	270	36,004	52,206
Special Projects Manager	33,114	45,837	280	37,805	54,817
Fire Chief	34,778	48,140	290	39,695	57,557
Building Official	36,504	50,530	300	41,680	60,435

* Based on 2912 hours annually

Recommended Pay Grade - By Internal Relationship

Computer Systems Administrator	36,504	50,530	300	41,680	60,435
Emergency Management Director	36,504	50,530	300	41,680	60,435
Grants/Social Services Director			300	41,680	60,435
Director of Technologies	36,504	50,530	310	43,763	63,457
HR Director	31,533	43,649	310	43,763	63,457
Library Director	34,778	48,140	310	43,763	63,457
Public Works Director	34,778	48,140	310	43,763	63,457
PW Director	34,778	48,140	310	43,763	63,457
Solid Waste/Environmental Services Direct	34,778	48,140	310	43,763	63,457
Engineer I	50,024	69,245	350	53,195	77,132
Assistant County Administrator	47,376		360	55,855	80,989
County Engineer	59,467	82,317	380	61,580	89,290
County Administrator	65,561	90,753	410	71,286	103,365

* Based on 2912 hours annually

Recommended Pay Grade - By Internal Relationship

Firefighter/EMT	22,422	31,038	230*	29,621	42,950
Firefighter/Paramedic	23,525	32,564	240*	31,102	45,098
Fire Lieutenant/Inspector			260*	34,290	49,720

* Based on 2912 hours annually

Recommended Pay Grade - Alphabetical

Admin Assistant (Network)	24,710	34,205	210	26,867	38,957
Animal Control Officer	19,365	26,805	150	20,049	29,070
Assistant County Administrator	47,376		360	55,855	80,989
Board Receptionist	22,422	31,038	170	22,104	32,050
Building Inspector	25,938	35,904	250	32,657	47,353
Building Official	36,504	50,530	300	41,680	60,435
Building/Planning Tech	21,341	29,541	190	24,369	35,335
Code Enforcement Officer	21,341	29,541	200	25,588	37,102
Computer Systems Administrator	36,504	50,530	300	41,680	60,435
County Administrator	65,561	90,753	410	71,286	103,365
County Engineer	59,467	82,317	380	61,580	89,290
Custodian	13,104	18,139	110	16,494	23,916
Director of Technologies	36,504	50,530	310	43,763	63,457

* Based on 2912 hours annually

Recommended Pay Grade - Alphabetical

Emergency Management Director	36,504	50,530	300	41,680	60,435
Engineer I	50,024	69,245	350	53,195	77,132
Engineering Tech	23,525	32,564	180	23,209	33,653
Facility Maintenance	22,422	31,038	170	22,104	32,050
Fire Chief	34,778	48,140	290	39,695	57,557
Fire Lieutenant/Inspector			260*	34,290	49,720
Firefighter/EMT	22,422	31,038	230*	29,621	42,950
Firefighter/Paramedic	23,525	32,564	240*	31,102	45,098
Grants Coordinator	31,533	43,649	270	36,004	52,206
Grants/Social Services Director			300	41,680	60,435
HEO I	19,365	26,805	150	20,049	29,070
HEO II	20,322	28,130	160	21,051	30,524
HEO III	21,341	29,541	170	22,104	32,050

* Based on 2912 hours annually

Recommended Pay Grade - Alphabetical

	Present		Proposed		
	Min	Max	P/G	Min	Max
HEO IV	23,525	32,564	180	23,209	33,653
HR Director	31,533	43,649	310	43,763	63,459
Kennel Tech	13,104	18,139	110	16,494	23,916
Library Director	34,778	48,140	310	43,763	63,457
Library Manager	31,533	43,649	250	32,657	47,353
Library Tech II	19,365	26,805	160	21,051	30,524
Mechanic I	18,429	25,510	150	20,049	29,070
Mechanic II	24,710	34,205	190	24,369	35,335
Mosquito Control/Animal Control Coordinat	24,710	34,205	200	25,588	37,102
Office Manager	24,710	34,205	210	26,867	38,957
Paraprofessional Librarian	23,525	32,564	210	26,867	38,957
Public Works Director	34,778	48,140	310	43,763	63,457
Purchasing Agent	25,938	35,904	210	26,867	38,957

* Based on 2912 hours annually

Recommended Pay Grade - Alphabetical

	Present		Proposed		
	Min	Max	P/G	Min	Max
PW Director	34,778	48,140	310	43,763	63,457
Recycling Tech	16,723	23,148	120	17,319	25,112
Road Maintenance Tech	16,723	23,149	120	17,319	25,112
Road Maintenance/Sign Tech	19,365	26,805	150	20,049	29,070
Roll Off Attendant	13,104	18,139	110	16,494	23,916
Secretary - Admin and Exe Offices	24,710	34,205	210	26,867	38,957
Secretary - Extension Services	22,422	31,038	170	22,104	32,050
Secretary (EMS)	17,555	24,301	140	19,094	27,686
Secretary (Solid Waste)	21,341	29,541	170	22,104	32,050
Social Services Tech	18,429	25,510	150	20,049	29,070
Solid Waste/Environmental Services Direct	34,778	48,140	310	43,763	63,457
Special Projects Manager	33,114	45,837	280	37,805	54,817
Sports Complex Coordinator	24,710	34,205	200	25,588	37,102

* Based on 2912 hours annually

Recommended Pay Grade - Alphabetical

Superintendent - PW	25,938	35,904	230	29,621	42,950
Team Leader	25,938	35,904	210	26,867	38,957
Veterans Services Officer	24,710	34,205	210	26,867	38,957

* Based on 2912 hours annually

Recommended Salary Schedule

110	7.93	9.71	11.50
	16,494	20,205	23,916
120	8.33	10.20	12.07
	17,319	21,215	25,112
130	8.74	10.71	12.68
	18,185	22,276	26,368
140	9.18	11.25	13.31
	19,094	23,390	27,686
150	9.64	11.81	13.98
	20,049	24,559	29,070
160	10.12	12.40	14.67
	21,051	25,787	30,524
170	10.63	13.02	15.41
	22,104	27,077	32,050
180	11.16	13.67	16.18
	23,209	28,431	33,653
190	11.72	14.35	16.99
	24,369	29,852	35,335
200	12.30	15.07	17.84
	25,588	31,345	37,102
210	12.92	15.82	18.73
	26,867	32,912	38,957

Recommended Salary Schedule

220	13.56	16.61	19.67	
	28,210	34,558	40,905	
230	14.24	17.44	20.65	
	10.17	12.46	14.75	* FF/EMT hrly rate
	29,621	36,286	42,950	
240	14.95	18.32	21.68	
	10.68	13.08	15.49	* Paramedic hrly rate
	31,102	38,100	45,098	
250	15.70	19.23	22.77	
	32,657	40,005	47,353	
260	16.49	20.19	23.90	
	11.78	14.42	17.07	*Fire Lt/Inspector hrly rate
	34,290	42,005	49,720	
270	17.31	21.20	25.10	
	36,004	44,105	52,206	
280	18.18	22.26	26.35	
	37,805	46,311	54,817	
290	19.08	23.38	27.67	
	39,695	48,626	57,557	
300	20.04	24.55	29.06	
	41,680	51,057	60,435	

Recommended Salary Schedule

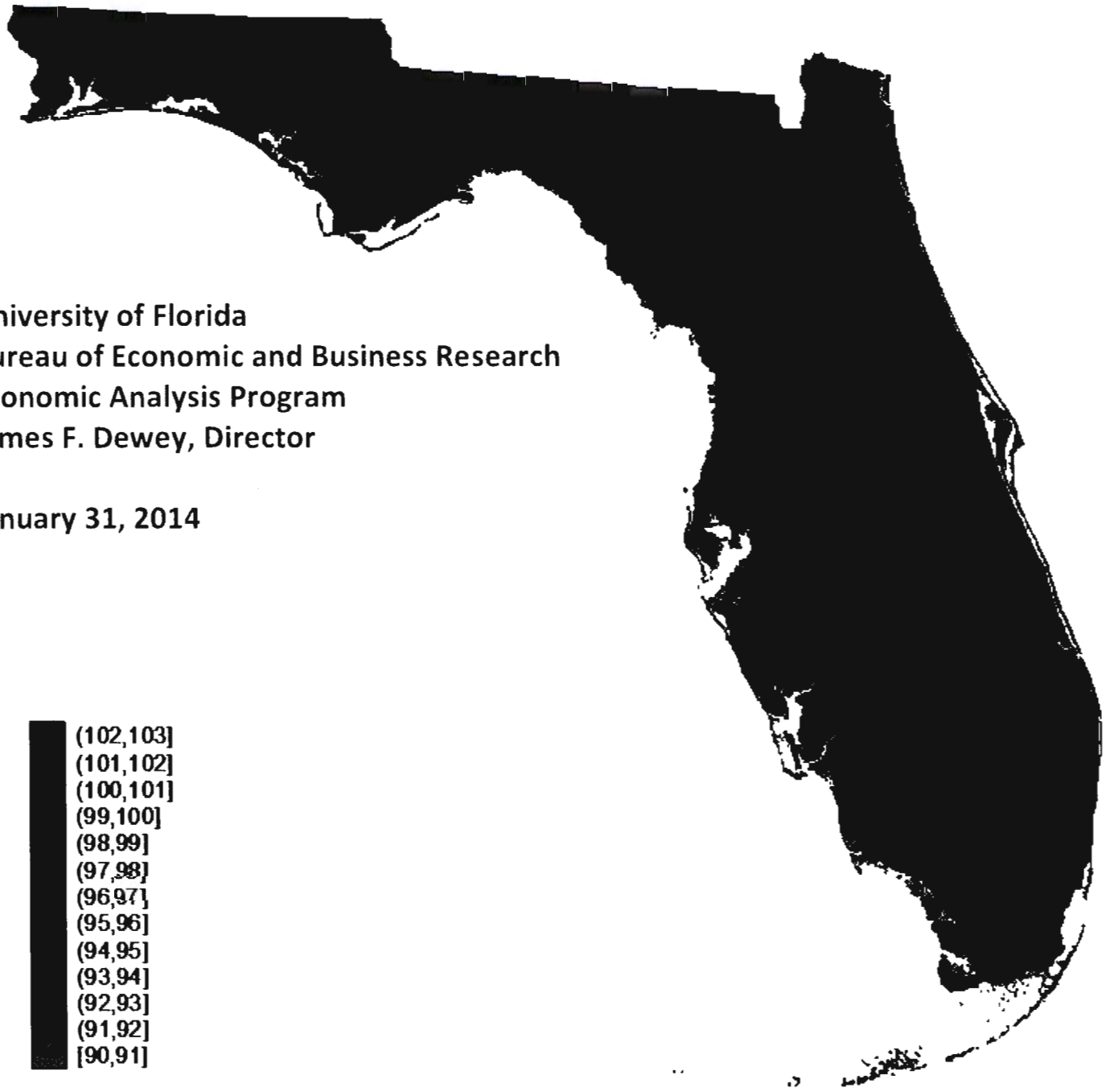
310	21.04	25.77	30.51
	43,763	53,610	63,457
320	22.09	27.06	32.03
	45,952	56,291	66,630
330	23.20	28.42	33.64
	48,249	59,105	69,961
340	24.36	29.84	35.32
	50,662	62,061	73,459
350	25.57	31.33	37.08
	53,195	65,164	77,132
360	26.85	32.90	38.94
	55,855	68,422	80,989
370	28.20	34.54	40.88
	58,647	71,843	85,039
380	29.61	36.27	42.93
	61,580	75,435	89,290
390	31.09	38.08	45.07
	64,659	79,207	93,755
400	32.64	39.98	47.33
	67,892	83,167	98,443
410	34.27	41.98	49.69
	71,286	87,325	103,365

2013

Florida Price Level Index

University of Florida
Bureau of Economic and Business Research
Economic Analysis Program
James F. Dewey, Director

January 31, 2014



A copy of this report may be obtained from http://www.bebr.ufl.edu or http://www.fldoe.org/fefp/.

Florida Price Level Index for School Personnel			
County	2013	2012	2011
Alachua	98.27	97.81	97.53
Baker	97.03	97.06	97.23
Bay	97.56	94.27	94.81
Bradford	96.46	96.50	96.66
Brevard	100.22	101.09	101.18
Broward	102.67	103.05	103.01
Calhoun	93.26	90.12	90.63
Charlotte	97.49	98.28	98.78
Citrus	94.99	93.66	94.04
Clay	99.07	99.11	99.28
Collier	100.28	103.92	101.91
Columbia	94.85	94.96	95.48
Dade	102.51	101.34	101.73
De Soto	96.48	96.72	97.14
Dixie	92.88	92.44	92.17
Duval	101.43	101.47	101.64
Escambia	98.20	95.32	95.36
Flagler	94.38	94.04	94.94
Franklin	90.67	91.36	91.92
Gadsden	94.19	92.94	93.74
Gilchrist	95.02	94.58	94.30
Glades	94.50	97.59	96.18
Gulf	93.98	92.06	92.08
Hamilton	91.47	91.77	91.31
Hardee	95.30	96.05	96.21
Hendry	95.62	97.61	97.11
Hernando	96.77	96.72	97.00
Highlands	94.29	93.62	94.09
Hillsborough	100.75	101.37	101.65
Holmes	92.23	91.71	91.04
Indian River	98.47	100.15	98.67
Jackson	91.79	92.27	92.39
Jefferson	93.94	91.15	91.38
Lafayette	91.44	91.01	90.75
Lake	97.02	96.43	96.95
Lee	100.87	102.15	102.67
Leon	96.75	93.87	94.08
Levy	94.86	94.42	94.15
Liberty	93.01	93.68	90.86
Madison	92.32	89.82	90.13
Manatee	100.05	101.85	102.02
Marion	94.97	95.51	95.83
Martin	99.24	101.76	99.30
Monroe	100.24	102.96	104.03
Nassau	98.67	98.71	98.88
Okaloosa	98.76	98.20	97.48
Okeechobee	95.07	96.90	95.55
Orange	100.49	99.88	100.42
Osceola	98.96	97.95	98.10
Palm Beach	102.18	104.90	103.78
Pasco	98.83	98.65	98.93
Pinellas	100.87	100.11	99.89
Polk	98.17	97.87	98.48
Putnam	95.30	95.33	95.50
Saint Johns	98.02	98.05	98.23
Saint Lucie	98.91	99.73	98.15
Santa Rosa	96.41	94.68	93.98
Sarasota	100.97	101.22	99.66
Seminole	99.17	99.33	99.35
Sumter	95.45	95.65	95.49
Suwannee	91.81	91.65	93.78
Taylor	92.00	90.86	92.32
Union	95.38	95.42	95.58
Volusia	98.25	95.78	96.19
Wakulla	95.27	94.74	92.94
Walton	95.69	96.70	97.33
Washington	93.74	91.24	91.10

The Florida Price Level Index (FPLI) was established by the Legislature as the basis for the District Cost Differential (DCD) in the Florida Education Finance Program. In this role, the FPLI is used to represent the costs of hiring equally qualified personnel across school districts. Since 1995, and at the request of the Legislature, the Bureau of Economic and Business Research (BEBR) at the University of Florida has performed an ongoing review of the methodology of the FPLI and has made appropriate recommendations to improve it. Since 2000, BEBR has also been responsible for calculating the FPLI. To denote its intended use as an adjustment factor for school personnel costs, the index presented in this report is referred to as the FPLI for School Personnel, or FPLI_SP. Note that this is a cross-sectional measure that compares relative wage levels among Florida's 67 counties and does not measure inflation from one year to the next.

Results

The table on this page presents the index for 2013, which is constructed so that the population-weighted average is 100. The median Floridian, ranked by county FPLI_SP, lives in Hillsborough County, with an index value of 100.75. That is, less than half of the state's residents live in counties with index values that are greater than 100.75, less than half in counties with index values that are less than 100.75, and the rest live in Hillsborough County. The 7 counties with index values over 100.75 together account for 44.4 percent of the state's population and the 59 counties with index values below 100.75 together account for 49.1 percent of the state's population. The map on the cover displays the distribution of the FPLI_SP across the state. Index values tend to be higher in more populous counties. As population density increases workers face higher housing costs, longer commutes, or both, for which they must be compensated in the form of higher wages. Of course, factors other than housing prices affect wages in a market economy, so relative wages do not track relative housing prices exactly.

About the FPLI

Use of the FPLI in the DCD assumes districts must offer salaries that will support similar standards of living to attract equally qualified personnel. It further assumes that the FPLI measures the relative costs of maintaining a given standard of living across Florida's counties—that is, the FPLI is used as a Cost of Living Index (COLI) in the DCD.

The Consumer Price Index (CPI), constructed by the U.S. Bureau of Labor Statistics (BLS) using the concept of a COLI as a framework, is perhaps the best known example of a price index.[1] Indeed, use of the FPLI to index costs from one Florida county to the next parallels the use of the CPI by the Federal Government to index Social Security funds from one year to the next. The CPI calculation, however, is not static—the BLS continually evaluates and improves its methods. Numerous adjustments are made to measured price data to make the CPI more appropriate in its intended use as a COLI for comparisons across time periods at a given location.[2] BEBR's work on the FPLI since 1995 has been aimed at making it more accurate and appropriate in its use as a COLI for comparisons across locations at a given point in time.

At a given location, factors other than the monetary costs of goods and services that significantly affect the compensation needed to maintain a given standard of living are nearly the same from one year to the next. Variations in climate from year to year, for example, can usually be ignored

[1] Question 4 under "Frequently Asked Questions" at the CPI homepage http://www.bls.gov/cpi/home.htm discusses this point. Chapter 17 of the *BLS Handbook of Methods*, which may be accessed at the same web site, contains more detail.

[2] Links to documentation for many hedonic adjustments may be found at http://www.bls.gov/cpi/home.htm

when estimating changes in the cost of living. Across locations, however, such factors as climate, cultural and recreational opportunities, and services and taxes vary widely. In turn, variations in these factors affect workers' standards of living and thus the ability of employers—including school districts—to hire personnel. Thus, a COLI intended to make comparisons across space must allow for variation in such factors.[3] Beginning with the 2003 FPLI, BEBR has used data on private market wages to construct an index of the relative compensation required to attract equally qualified workers across Florida's school districts. Referred to as the FPLI_SP, this index is more appropriate for comparing the costs of hiring equally qualified personnel for identical jobs across locations at a given point in time.[4]

Across areas, other things being equal, places that are more productive, and thus more attractive to firms, will have higher wages and prices, while places that are more pleasant in which to live, and thus more attractive to workers, will have lower wages and higher prices. Consequently, a simple weighted average of the relative prices of purchased goods and services is inferior to the FPLI_SP as a COLI in a spatial context. In areas that are otherwise less attractive to live in, relative wages will exceed relative prices, while in areas that are otherwise more attractive to live in, relative prices will exceed relative wages.

Within areas, firms that must locate closer to the urban core must pay higher wages than firms free to locate near suburban or outlying areas. That is because those who work at firms located in the urban core must either pay higher housing costs or endure longer commutes. Further, the larger the difference between housing costs in the urban core and in suburban and outlying areas, the larger this pay difference will be. Therefore, types of jobs that tend to be concentrated farther from the urban core will show less difference in average wages between cities with high housing costs and cities with low housing costs than types of jobs that tend to be concentrated nearer the urban core. Therefore, BEBR controls for occupational centrality in constructing the FPLI. Similarly, productivity in some occupations may be more sensitive than average to city size or city income, and BEBR also controls for these affects.

In calculating the FPLI_SP, BEBR uses statistical techniques to estimate a raw index of wages for comparable workers employed in jobs of comparable centralization of employment across counties. Wage data for this calculation consist of average wages for over 700 occupations across Florida's 67 counties. Although data for each specific occupation are not available for all 67 counties, data for many individual occupations are available in even small counties. The Florida Department of Economic Opportunity's Bureau of Labor Market Statistics collects these data as part of the U.S. Bureau of Labor Statistics' Occupational Employment Statistics (OES) Survey. Measures of occupational centralization are calculated from the US Census Public Use Microdata Sample and are used to capture differing adjustments across occupations with differing propensities to locate near the urban core.

Once the raw index has been calculated, additional techniques are used to smooth statistical variation. First, BEBR generates predicted index values for each county based on the correlation between the raw index and characteristics related to labor market outcomes, for example population density. This predicted index and the raw index are then combined by calculating a weighted average of the two. To illustrate, if the weight placed on the predicted index in the weighted average were 0.4, the weight placed on the raw index would be 0.6. The weights for each county are calculated to maximize the precision of the resulting estimate. Therefore, the higher the precision of the predicted index relative to the raw index, the higher the weight placed on the predicted index and the lower the weight placed on the raw index. Second, wages in nearby counties cannot differ too much from one another without inducing workers to commute from the low wage county to the high wage county. Therefore BEBR applies geographic smoothing to ensure differences in the index estimates for nearby counties are not inconsistent with their geographic proximity.

Summary

This report presented the 2013 FPLI_SP and the methodology used in its calculation. The index uses extensive data on wages, occupational characteristics, and local characteristics to estimate the relative wage level needed to maintain a given standard of living for occupations comparable to school personnel across Florida's counties. Although many things affect counties' FPLI_SP position, counties that are urban tend to have higher values.

[3] In terms of the CPI methodology adapted to a spatial context, this would be analogous to a full hedonic adjustment to the price of land across space to reflect all factors affecting standards of living that are determined with choice of residential location.

[4] In the 2003 FPLI Report, what is now designated as the FPLI_SP was named the Low Centrality FPLI_A.

Pay Grade	Jobs within Pay Grade	Minimum	Midpoint	Maximum	Current Minimum (Mandatory Minimum Wage and/or $1 Starting Wage increase as of 2023)	New Midpoi
110	Custodian, Kennel Tech, PT Roll Off Attendant, Concession Workers	$ 7.93 $ 16,494.00	$ 9.71 $ 20,205.00	$ 11.50 $ 23,916.00	$ 11.00 22,880.00	$: $ 28,0: $
120	Recycle Tech, RMT, FT Roll Off Site Attendant with new Starting Salary of $10.50/hour	$ 10.50 $ 21,840.00	$ 12.86 $ 26,740.90	$ 14.85 $ 30,883.06	$ 11.00 22,880.00	$: $ 28,0:
130	No current jobs for classification					
140	No current jobs for classification					
150	Animal Control Officer, HEO 1, Mechanic 1, RMT/Sign Tech with Starting Salary of $10. 50/hour	$ 10.50 $ 19,094.00	$ 12.86 $ 23,390.00	$ 13.76 $ 27,686.00	$ 11.00 22,880.00	$: $ 28,0:
160	HEO 2, Library Tech 2 with new Starting Salary of $10.50 per hour	$ 10.50 $ 21,051.00	$ 12.40 $ 25,787.00	$ 14.67 $ 30,524.00	$ 11.00 22,880.00	$: $ 28,0:
170	Facility Maintenance, HEO 3, Secretary-Extension Services, Secretary- Solid Waste	$ 10.63 $ 22,104.00	$ 13.02 $ 27,077.00	$ 15.41 $ 32,050.00	$ 11.63 24,190.40	$: $ 29,6

Pay Grade	Jobs within Pay Grade	Minimum	Midpoint	% Maximum	Current Minimum (Mandatory Minimum Wage and/or $1 Starting Wage increase as of 2023)	New Midpoi
180	Engineering Tech, HEO 4,	$ 11.16	$ 13.67	$ 16.18	$ 12.16	$
		$ 23,209.00	$ 28,431.00	$ 33,653.00	$ 25,292.80	$ 30,9
190	Building/Planning Tech, Mechanic 2	$ 11.72	$ 14.35	$ 16.99	$ 12.72	$
		$ 24,377.60	$ 29,848.00	$ 35,339.20	$ 26,457.60	$ 32,4
200	Code Enforcement Officer, Animal Control Coordinator	$ 12.30	$ 15.07	$ 17.84	$ 13.30	$
		$ 25,588.00	$ 31,345.00	$ 37,102.00	$ 27,664.00	$ 33,8
210	Office Manager, Paraprofessional Librarian, Purchasing Agent,Secretary - Admin and Exe Offices,Team Leader,Veterans Services Officer	$ 12.92	$ 15.82	$ 18.73	$ 13.92	$
		$ 26,867.00	$ 32,912.00	$ 38,957.00	$ 28,953.60	$ 35,4
220	No current jobs for classification					
230	PW Superintendent	$ 14.24	$ 17.44	$ 20.65	$ 15.24	$
		$ 29,621.00	$ 36,286.00	$ 42,950.00	$ 31,699.20	$ 38,8
	FF/EMT *	$12.78	$ 15.59	$ 18.39	$ 13.78	$
		$35,221.68	$ 42,966.04	$ 50,682.84	$ 37,977.68	$ 46,3
240	FF/Paramedic *	$13.16	$ 16.15	$ 19.05	$ 14.16	$
		$ 36,268.96	$ 44,509.40	$ 52,501.80	$ 39,024.96	$ 47,5

Pay Grade	Jobs within Pay Grade	Minimum	Midpoint	Maximum	Current Minimum (Mandatory Minimum Wage and/or $1 Starting Wage increase as of 2023)	New Midpoir
250	Building Inspector, Library Manager	$ 15.70	$ 19.23	$ 22.77	$ 16.70	$ 2
		$ 32,657.00	$ 40,005.00	$ 47,353.00	$ 34,736.00	$ 42,54
260	Fire Inspector	$ 16.49	$ 20.19	$ 23.90	$ 17.49	$ 2
					$ 36,379.20	$ 44,54
	Fire Lt *	$ 14.50	$ 17.69	$ 20.87	$ 15.50	$ 1
		$ 39,962.00	$ 48,753.64	$ 57,517.72	$ 42,718.00	$ 52,11
270	Grants Coordinator	$ 16.49	$ 20.19	$ 23.90	$ 17.49	$ 2
		$ 34,290.00	$ 42,005.00	$ 49,720.00	$ 36,379.20	$ 44,55
280	Special Projects Manager, Parks and Recreation Manager	$ 18.18	$ 22.26	$ 26.35	$ 19.18	$ 2
		$ 37,805.00	$ 46,311.00	$ 54,817.00	$ 39,894.40	$ 48,84
290	Fire Chief	$ 19.08	$ 23.38	$ 27.67	$ 20.08	$ 2
		$ 39,695.00	$ 48,626.00	$ 57,557.00	$ 41,766.40	$ 51,15
300	Building Official	$ 20.01	$ 24.55	$ 29.06	$ 21.01	$ 2
		$ 41,680.00	$ 51,057.00	$ 60,435.00	$ 43,700.80	$ 53,53
310	Director of Technologies, Public Works Director, Solid Waste/Environmental Services Director	$ 21.04	$ 25.77	$ 30.51	$ 22.04	$ 2
		$ 43,763.00	$ 53,610.00	$ 63,457.00	$ 45,843.20	$ 56,14
320	No current jobs for classification					

Pay Grade	Jobs within Pay Grade	Minimum	Midpoint	Maximum	Current Minimum (Mandatory Minimum Wage and/or $1 Starting Wage increase as of 2023)	New Midpoi
330	No current jobs for classification					
340	No current jobs for classification					
350	Engineer I	$ 25.57	$ 31.33	$ 37.08	$ 26.57	$
		$ 53,195.00	$ 65,164.00	$ 77,132.00	$ 55,265.60	$ 67,71
360	Assistant County Administrator	$ 26.85	$ 32.90	$ 38.94	$ 27.85	$
		$ 55,855.00	$ 68,422.00	$ 80,989.00	$ 57,928.00	$ 70,9
370	No current jobs for classification					
380	County Engineer	$ 29.61	$ 36.27	$ 42.93	$ 30.61	$
		$ 61,580.00	$ 75,435.00	$ 89,290.00	$ 63,668.80	$ 77,9
390	No current jobs within classification					
400	No current jobs for classification					
410	County Administrator	$ 34.27	$ 41.98	$ 49.69	$ 35.27	$
		$ 71,286.00	$ 87,325.00	$ 103,355.20	$ 73,361.60	$ 89,8

** FY 2022 All employees not afffected by the minimum wage increase received $1 per hour increase

**FY 2023 All employees not affected by the minimum wage increase receive $1 per hour increase and County Administrator request concurrence to increase sta

Jobs marked with * are based on 2756 hours annually

Taylor County Volunteer Recruitment

Neighboring Fire Rescue Volunteer Programs

Jefferson County

12 active volunteers – 4 Station

Uses Online Fire 1 Program (Limited to no success)

Had a stipend program for two years but was unsuccessful and has been abandoned

Semi annual payment of $300 based on training activity

Madison County

10-15 active volunteers- 6 Stations

Uses Online Fire 1 Program (No success)

No Stipend

Dixie County

5 active volunteers – 5 Stations

Uses Online Fire 1 program with limited success, No traditional classes in recent years

Fuel and Station time monthly stipend

$20 fuel stipend for every call responded to

$30 stipend for every 12 hour shift spent at fire station

Demanding on staff to verify activity and process monthly payments

Has had little affect on increasing numbers

Currently revamping their cadet program from a station based meeting to a high school elective class so graduating seniors would have their Fire Fighter 1 Certification and Medical First Responder. Program is demanding of staff time.

All neighboring departments are facing similar struggles recruiting and retaining volunteer fire fighters. Dixie County has the most aggressive program in respect to stipends and cadet program but have the greatest deficit in number of active volunteers. All departments reported that they do have a greater number of volunteers on roster but without participation.

Stipends

Training activity stipend

Set amount given to volunteers based on active service. Simplest option to manage with annual report of completion of training hours. Increased training hours could have positive affect on ISO scoring. May not incentivize actual emergency response.

$500 annually for meeting required training hours approximately $10,000 needed based on current volunteer staffing

Stipend Per Response

Set amount given to volunteers monthly based on the number of emergency calls responded to. This would require a higher degree of tracking individual volunteer response for payments.

$25 per call, estimated volunteer response at 50% of current call volume and two volunteers responding approximately $20,000 annual budget

These options in some fashion have been used by TCFR and/or other departments with limited success. That is not to say that any of the options should not be attempted. The best chance to bolster the number of volunteer fire fighters is to take a broad approach and implement as many options as possible with the understanding that each option on it's own will have limited results. Another concern is that the current volunteer coordinator would not be able to lead this broad approach.

VOLUNTEER FIRE FIGHTER TRAINING PROGRAM

1. **Hire a PT Volunteer Fire Fighter to recruit, train, and coordinate program**

   A. **Responsibilities**
   - Plan and develop two classes annually
   - Teach the classes
   - Assist with the certification process
   - Coordinate recertification classes
   - Recruitment of trainees
   - Maintain records
   - Approve call compensation
   - Report periodically to the BOCC

   B. **Compensation**
   - **$18/hr** — We can discuss
   - **No benefits**

2. **Classes**
   - **Traditional classroom**
   - **Online**

3. **Recruitment**
   - **Newspaper**
   - **Online**
   - **Billboards/signs/flyers**
   - **Festival booths**
   - **High School**
   - **Civic clubs/organizations**

4. **Other/Incentatives**
   - **Seek local business discounts**
   - **Fund raisers**

5. **Training compensation**
   - **$500 (after certification) with a written commitment to Ta Co**

6. **Recertification compensation**
   - **$200 (after certification) with a written commitment to Ta Co** Discuss - may not apply

7. **Call compensation**
   - **$25/call**
   - **Must complete form for each call online or turn in to coordinator for approval**
   - **Insure all volunteers get notified of each call**

VOLUNTEER FIRE FIGHTER RESPONSE LOG
($25/call)

Print Name: _____ Address: _____

Phone # _____ Email _____

Date of call: _____ Time of call: _____ Address of call: _____

I certify that I responded to the above call.

Signature: _____ - Date: _____

Taylor County Board of County Commissioners
JOB TITLE: Volunteer Fire Fighter Coordinator

EXEMPT (Y/N): No
Pay Grade 260
LOCATION: Fire/Rescue
EMPLOYEE NAME:
PREPARED BY:
APPROVED BY:

UNION (Y/N):
DOT CODE:
DEPARTMENT: Fire/Rescue
SUPERVISOR: Fire Chief
DATE:

THIS POSITION DOES NOT TAKE TANGIBLE EMPLOYMENT ACTIONS

SUMMARY:
Under direction of the Fire Chief, the Volunteer Fire Fighter Coordinator will focus on recruitment and retention of volunteer fire fighters within Taylor County Fire Rescue.

ESSENTIAL DUTIES AND RESPONSIBILITIES include the following. Other duties may be assigned.

- Develops, coordinates, and manages volunteer recruitment programs.
- Serves as lead fire instructor of new Volunteers training classes.
- Acts as liaison between the volunteer fire fighters and the Fire Chief.
- Coordinates and manages in service volunteer training.
- Represents the department in meetings/ education/ and outreach.
- Develops, coordinates, and manages volunteer recognition programs.
- Operates a motor vehicle and various office machines.
- Must meet and maintain proficiency standards.
- Apply and/or manage grants as related.
- Any other reasonable duties determined necessary by supervisor.

QUALIFICATION REQUIREMENTS
To perform this job successfully an individual must be able to perform each essential duty satisfactorily. The requirements listed below are representative of the knowledge, skill, and/or ability required.

DESIRABLE QUALIFICATIONS:
Knowledge, Abilities and Skills
Knowledge of the volunteer system, and training requirements. Knowledge and experience in conducting course work. Oral communication skills to present effective training and public outreach. Interpersonal skills to engage active participation of volunteers. Management skills including leadership, supervisory skills, problem analysis, decision making, planning, organization and time management.

PHYSICAL DEMANDS:
The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

- While performing the duties of this job, employee is required to talk and to hear.
- Required to stand; walk; sit; and use hands and fingers.
- Employee is required to operate various motor vehicles.
- Often required to lift and/or move items of moderate weight.

- Sufficient physical strength and agility to perform heavy lifting.

WORK ENVIRONMENT:

The work environment characteristics described here are representative of those an employee encounters while performing the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

- While performing this job, the employee often works near moving mechanical parts and heavy equipment and vehicles.
- Occasionally exposed to fumes and/or airborne particles, toxic or caustic chemicals, and outdoor weather conditions.
- Job requires working in an office environment; outdoor environments in all weather; and can often be in a high stress situation.
- Job may require an adjusted schedule to work some night and/or weekend hours as needed.

EDUCATION AND/OR EXPERIENCE:

Must have graduated from high school or an equivalent recognized certificate.
Experience in management at a supervisory level is preferred.

CERTIFICATES, LICENSES, REGISTRATION:

Requirements include;

- Valid Florida Driver's license
- Florida Certified Fire Instructor I
- NIMS I-100, I-200, I-700, I-800
- Emergency Vehicle Operator Course (or equivalent)
- Certified Florida State Fire Marshall Fire Fighter I
    - Fire Fighter II preferred
- Florida State Emergency Medical Technician certification