

**EXHIBIT A**  
**OBSERVED 2008 FLOODING PROBLEMS**

LOCATION	APPARENT REASON FOR FLOODING	POTENTIAL SOLUTIONS	ACTIONS TAKEN OR SCHEDULED
<p>Quinn Street &amp; adjacent areas (McKenna, Saunders, Pawley &amp; Chapman)</p>	<p>Two major reasons: elevation of Imperial River &amp; subsequent drainage conditions</p>	<p>David McKee, P.E., did preliminary review, with modifications to driveway dips/culverts for the north two (2) blocks of Quinn, preliminary construction cost estimated at <u>\$65,820</u> plus engineering, plus potential permitting &amp; ROW issues, and a preliminary estimate of <u>\$278,500</u> for a drainage system along all of Quinn, which would serve as a "backbone" for potential (future) drainage lines along McKenna, Saunders, Pawley and Chapman to tie into. Those would be expensive and their costs are <u>not</u> included in the \$278,500.</p>	<p>McKee Report presented to City Council. No further action taken. There were public comments made at Council Meeting that water was coming off Imperial Parkway. Staff did find grass growing around new inlets, removed it, and installed concrete collars, to improve flow into inlets.</p>
<p>Oakland Road / Bonita Beach Road</p>	<p>Elevation of Imperial River. The Lee County DOT, as part of the Bonita Beach Road Widening, constructed a detention pond, north of Beach Road and east of the Flea Market. During flood conditions, instead of this pond draining north to the river, the flows go out of the pond, into a large box culvert to the south ditch of Bonita Beach Road, and continue west to Oak Creek. The past summer, two (2) situations were noted that potentially might be improved upon. First, there are several horizontal bars on the culverts under driveways. These are required to prevent victims or large debris from being "sucked in." The bars, however, do significantly interfere with flows. During the flood, staff asked the LCDOT if some of the lower bars could be removed, but the response was that this could not be done under high water conditions. Staff will attempt to work with the LCDOT to try to have these removed prior to future similar events. Secondly, it appears that the grates on the concrete weir structure in the ditch just east of Oak Creek impede flows into Oak Creek.</p> <p>There seems to be a concept, often repeated, that the flood gate on a pipe under Beach Road, west of the Hess Station, was to be opened during floods, to allow water to run south beneath Bonita Beach Road, into the FP&amp;L ROW and eventually to the headwaters of Oak Creek. The story continues that recent developments south of Beach Road may have impacted the ability of the water to flow west.</p>	<p>Staff surveyed some elevations in large undeveloped parcel immediately east of Oakland for feasibility of a new drainage ditch.</p> <p>Discuss with LCDOT and SFWMD, the potential of modifying the grates to more readily pass flood flows.</p>	<p>No actions taken. Main problem is elevation of Imperial River vs. elevation of adjacent property.</p> <p>This flow to the FP&amp;L ROW, and then to the west, appears to be an urban myth. Staff has looked at an "old" 2' contour map of the area. It shows a rather high ridge between this location at Oakland and Beach Road and McKenna, Saunders, Pawley and Chapman. From the contours, it appears that flows may have gone to the west not too far south of Beach Road, but not to the FP&amp;L ROW, and then west. During recent floods, with the flood gate open, there was minimal flow, if any. It appeared that any flow occurring was actually to the north.</p>

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Spring Creek Headwaters - East of Old 41	<p>Likely a combination of factors. What seemed apparent, however, were flooding conditions at various locations between Cockleshell Road &amp; Imperial Parkway, while Spring Creek at US 41 was significantly below flood levels.</p> <p>A. Drainageways extremely overgrown along FP&amp;L easement &amp; through areas within Cedar Creek subdivision.</p> <p>B. Some culvert pipes apparently undersized, under railroad, for example.</p>	<p>Removal of downed limbs, "exotics," and other vegetation which restricts drainage.</p> <p>Additional pipes or replacement with larger pipes.</p>	<p>City retained a professional Land Surveyor to review ownership records and maintenance responsibilities of Cedar Creek HOA and Spring Creek East HOA. Cedar Creek has completed some removal work. It is understood by staff that the SFWMD has undertaken enforcement action against the Cedar Creek HOA. City may also need to undertake enforcement of additional clearing/removals. Some assistance may also be available from the SFWMD and Lee County Natural Resources.</p>
East Terry & I-75	<p>Flow from area between Southern Pines Drive and I-75 (south of Eagles Club) runs to the south with essentially nowhere to go. There are old twin 36-inch pipes to the south, but these are blocked at the north end. There is a box culvert under I-75 which, in theory, allows this water to flow east (or west).</p> <p>On the east side of I-75, considerable flows come from the east along the north side of Terry St. and from the north along Morton Ave. On the east side of I-75 there are twin 42" pipes to the south, crossing Terry St. to a N-S FDOT ditch, which runs south to the river. In some locations this ditch has significant vegetation.</p>	<p>1) There are twin N-S 36-inch pipes under Terry St., west of I-75, but they are currently closed on north end. It appears that when I-75 was constructed, they did convey flows to open areas to the south. Those "open areas" have now been filled and are in the FP&amp;L easement, but remain privately owned, being parts of the lots with houses fronting Pinecrest Lane. Technically, it would be possible to re-create the ditch south of Terry St. and open up the twin 36-inch pipes west of I-75. FP&amp;L appears to be agreeable to this, but the response to a City request for easements from lot owners has not met with widespread approval. Staff is looking at the possibility of routing "small" flows down west side of Pinecrest Lane. One alternative considered would be to direct flows coming off Marni Fields to the west on the north side of Terry St. to Orange Creek, however, there is no pipe crossing below Southern Pines Dr. and it is thought that there would be significant utility conflicts in the Terry St. right-of-way.</p> <p>2) The N-S culverts east of I-75 appear to have some sediment in them and should be cleaned.</p> <p>3) The ditch south of Terry St., east of I-75, in the vicinity of the Rue-de-Paix cul-de-sac has significant amounts of exotics and weeds cleaned out.</p>	<p>No offers of payment for easements under the FP&amp;L easement have been made by staff. Fourteen (14) requests have been sent out, with only two (2) approvals received.</p> <p>1) Condemnation of portions of a dozen lots south of Terry St., west of I-75, would appear to be very costly. Staff will look at the potential installation of an approximately 15-inch pipe along the west side of Pinecrest, with the partial re-opening of one of the twin 36-inch pipes crossing Terry, west of I-75. Staff is of the opinion that the FDOT cleaning of pipes and swales east of I-75 will improve drainage from the north side of Terry to the south, but expects the problem to continue unless more improvements are possible. One option would be for the City to have the value of the easements appraised and then negotiate for the acquisition of easements, in order to build a ditch or pipes to the south of the twin pipes now crossing Terry St., west of I-75.</p> <p>2) FDOT has agreed that, prior to "rainy season," twin 42" pipes under Terry, on the east side of I-75, will be cleaned, as will the box culvert under I-75 on the north side of Terry St.</p> <p>3) By February, the ditch south of Terry and east of I-75 supposedly will be cleaned of vegetation by FDOT.</p>

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Shangrila Road	Apparently several reasons for flooding: Water not easily getting into pipes constructed by Centex running under Hawthorne berm; flow through Hawthorne Preserve impeded by vegetation; overtopping of drainage ditch coming from under I-75, ¾ mile to the north; elimination of sheet drainage through what is now Hawthorne; and the elimination of minor drainage ditches throughout the area over many years.	<p><u>Minor/Interim:</u></p> <p>A. Centex constructs new swale along toe of berm to improve flow into “berm pipes.”</p> <p>B. Centex constructs new N-S swale outside of the west Hawthorne wall, to convey run-off from Shangrila, east of Windley Key Terrace, south to the swale now running along the north edge of the Hawthorne Preserve.</p> <p>C. Improve “neighborhood drainage” north of Shangrila.</p> <p><u>Major/Long Term:</u> Rather than simply “handle” the stormwater generated by the new road, City could intercept the majority of the now-existing off-site stormwater, and take affirmative measures to convey this flow to the Old 41 area, without depending on flow through the Hawthorne Preserve.</p>	<p>A. Verbal commitment from Centex to construct swale.</p> <p>B. Verbal commitment from Centex to construct swale from Shangrila Road, south to their Preserve area.</p> <p>C. Staff discovered, on a plat, the existence of an E-W drainage easement ½-block north of Shangrila, between Paradise and Noel. The easement was choked with vegetation and has been cleared and will soon be re-graded. In reviewing old aerial photos, staff discovered that at one time a ditch existed between Paradise and Cockleshell along the south boundary of Bonita Golf &amp; CC. In fact, there is an existing 10’ wide easement along the properties immediately south. Staff has discussed with Bonita Golf &amp; CC, and it appears that they will grant an easement to the City, at which time the City will restore the ditch.</p> <p>Staff has discussed with Agnoli, Barber &amp; Brundage the potential of revising the Professional Services Agreement, to include additional stormwater modeling and facility design in order to effectively manage future stormwater events to minimize flooding, by constructing conveyance facilities to handle flows which originate off-site (north) of this project. This design change, anticipated for Council consideration independently, is estimated at approximately \$155,000.</p>
Windsor Road	Existing swales are very flat with majority of run-off to one location – the intake at south end of Windsor.	<p>Two concepts have been discussed with the SFWMD:</p> <p>A. Adding another major intake on Windsor road to the north of existing. The existing 30” pipe to river appears to have more than enough capacity, but getting water into it without severe flooding appears to be an issue.</p> <p>B. There are catch basins on side streets along west side of Windsor, south of Bonita Beach Road, which now simply discharge to the swale. Getting SFWMD approval to connect to 30” pipe would improve conditions.</p>	<p>A. &amp; B. Staff and David McKee have met with SFWMD to discuss potential modifications to existing permit. There appears to be an opportunity to complete some engineering analysis with the result that permit might be modified.</p>

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Morton Grove Development Lakes	Lakes full with 6" – 12" water on most street areas – City assisted for three (3) days with emergency pumping to Morton Road. Reason for flooding not entirely clear. It was noted that their "overflow" is to north side of E.Terry St. Swale and outlet end of overflow pipe was submerged by amount of water running west along Terry St.	Staff has concerns that part of the problem may be that the accumulation of water along the north side of Terry St. has impeded the flows from the Morton Grove development's overflow pipe.	Staff has notified HOA in writing to have their internal system checked by a Professional Engineer for conformance with the SFWMD. With the FDOT cleaning culverts at I-75 and Terry St., and removing vegetation on the ditch running to the south on the east side of I-75, conditions should be improved.
Bonita Springs Middle School	Widespread and frequent flooding on school grounds.	Reconstruct Terry St. pipe crossing, at an elevation approximately 1.0 foot lower. SFWMD approval would be needed for this.	Staff has cleaned, demucked and rip-rapped channels both north and south of Terry St. to improve flows.