Present Configuration and Condition Lely Irrigation. 1/10/2017

St Andrews

One Motorola XM Controller at the corner of 41 and St Andrews. Shared equipment with collier County Road and Bridge. 16 Zones. Uses a HIT manufactured system to send a coded signal to each valve using two wires for all 16 zones. The HIT system requires a special decoder in addition to the solenoid valve at each valve. Both the Motorola XM controller and the HIT system are outdated and need to be replaced.

Pebble Beach Circle

Two Motorola Scorpios on Pebble Beach Circle operate 24 zones. These controllers act as slaves to the ST Andrews Motorola XM. There is also a HIT unit located at Pebble Beach Circle which operates like the one on St. Andrews. The Scorpios were last manufactured in 1998 and are not fully supported by Motorola. Sooner or later they will fail completely and have to be replaced.

Warren Street

Main water supply for all of Lely with the exception of Doral Circle and Valley Stream. The location is a Motorola M unit which controls a pump, a main valve, flow meter, and a set of filters. The main valve opens when water is called for by St Andrews and/or Pebble Beach circle. The pump is not self priming and is activated by a pressure switch so that the feed to the main valve is pressurized at all times.

Water Supplies

Water is supplied by a three inch main line from a MSTU owned mixing chamber on Warren St. This mixing chamber supplies pressure to the three inch line via a 115 Gal/minute pump on the mixing chamber. The pump is a pressurized system. When pressure on the output side falls, the pump will come on. There is a main valve at the output of the pump which is controlled by the county central control system and acts as a flow meter. Suction for this pump is from the chamber. The chamber is filled by one of two sources depending on the situation.

The first and primary design choice is from an unpressurized two inch Reuse water supply line. The only pressure on the line is from the height of the head in the adjacent main reuse water tank (maximum of 7 psi). If there is pressure on this line and the chamber is calling for water, a valve opens and directs reuse water into the tank

The second choice arises when there is no or little water coming in from the reuse line and the chamber pump is lowering the level of water in the chamber. When the water reaches a lower level than normal, a valve leading to a potable water supply meter (also owned by the MSTU) opens and supplies water to the chamber. There is an air gap on both input lines to prevent cross contamination. To prevent over using reuse water by pumping it faster than it is supplied and to prevent using an excessive amount of potable water, each zone is run one at a time with an 11 minute gap between zones.

To get water on Lely the following events must happen.

1. The main valve on the output of Chamber Pump must open.
2. Pressure drops and the Chamber Pump comes on
    a. Reuse water is supplied to the Chamber or
    b. Potable water is supplied to the Chamber
3. At least one irrigation valve in Lely is directed to open.
4. Items 1. And 2. Remain open until item three in sequence opens and closes all irrigation valves to water Lely.

Doral Circle

Stand alone Hunter system controlling two zones and using potable water. This controller was recently changed from a Motorola Scorpio to the Hunter. December 2016

Valley Steam

Stand alone Hunter system controlling two zones and using potable water. This controller was recently changed from a Motorola Scorpio to the Hunter. January 2017

Mixing Chamber Design Issues

1. The way the mixing chamber is designed, essentially opening a 2" valve to a line that has a very small pressure causes the mixing chamber to be drawn down and potable water used unless the irrigation is restricted by doing one zone at a time and with a time delay between zones to allow the tank to fill up.

General Irrigation Design Issues.

1. The Mixing chamber pump is most efficient at 80% power load. With a 115 gal/min pump, this means that when irrigating the flow rate should be at 92 gal/min for most efficient use. The system has never been configured for the most efficient use due to water supply issues.

Centralized Control Issues

The three main controllers are controlled by the county's centralized control system ICC Pro.

1. The only way to find out exactly what is going on with the overall system is to go through the centralized control system. At this time, the MSTU staff has direct access to the system but it is very complicated and very restrictive to our actions.
2. Alarms generated by the Motorola system are generally not timely reported.
3. The system has a fair amount of capability of trouble shooting alarms which is unutilized. We have not been trained on this feature and would have to go to school to acquire the training.

Installation Issues

1. Grounding or lack of has been a major issue in every Motorola installation inspected. The installation did not even follow Motorola plans.

Grounding was fixed in 2016 on Pebble Beach Circle and Warren St.

What is needed?

1. Correct electrical installation issues, grounds, solar panels etc. Mostly corrected 2016 but still need to correct St Andrews...
2. Change control of the mixing chamber pump from Pressurized to timer controlled. On Radio Road East, pump usage dropped 75% when this was done. A design has been completed and will be tested on Radio Road.
3. Balance the irrigation rate so that 92 gal/minute is achieved. Requires a consistent pressurized water supply.
4. The timers and the pump controls need to talk to each other so that they are synchronized with each other. This will depend on the ultimate design of the system. The Motorola is capable of this but is not being used in a way that is beneficial. Recommend replacing system.
5. Need direct access to the (any) centralized control system. Recommend replacing system.
6. Need direct access to the operator of the centralized control system. Recommend replacing system.