Federal Aviation Administration

Mike Monroney Aeronautical Center

Federal Green Challenge

Presented By: Dave Masias

Date: February 26, 2015

Background

- THE FEDERAL AVIATION ADMINISTRATION (FAA) MIKE MONRONEY AERONAUTICAL CENTER (MMAC) ENCOMPASSES OVER 3.5 MILLION SQUARE FEET OF SPACE IN 130 BUILDINGS SPREAD OVER 1,100 ACRES.
- THE CENTER IS HOME TO AN AVERAGE OF 6,300 EMPLOYEES AND AIR TRAFFIC CONTROLLERS, PILOTS AND INTERNATIONAL STUDENTS DAILY.
- THE CAMPUS CONTINUALLY INCREASES IN SIZE WHICH IMPACTS THE ENERGY AND WATER NEEDED TO MEET THE CRITICAL MISSION OF OUR OCCUPANT ORGANIZATIONS.
- THE CENTER HAS BECOME THE MOST INDUSTRIALIZED FACILITY IN THE DEPARTMENT OF TRANSPORTATION (DOT) AND AFTER WASHINGTON, DC, IT HAS THE LARGEST NUMBER OF DOT EMPLOYEES IN A SINGLE LOCATION.

Why

- **EXECUTIVE ORDER 13514 REQUIRES FEDERAL AGENCIES TO REDUCE WATER CONSUMPTION INTENSITY (GAL/GSF) 2% ANNUALLY THROUGH THE END OF FISCAL YEAR 2020, OR 26% BY THE END OF FY 2020.**

- **FOR THE PAST YEARS ENERGY AND WATER CONSERVATION HAS BEEN AN IMPORTANT ASPECT OF THE AERONAUTICAL CENTER'S MISSION CRITICAL REQUIREMENTS**

What was identified

THE INNOVATIVE IDEA OF CREATING AN ENERGY COUNCIL TEAM TO PERFORM ENERGY PLANNING AND LEADERSHIP ASSISTANCE TO ENSURE GUIDANCE AND POLICY FOR ENERGY PROGRAM EXECUTION ARE ESTABLISHED AND PROMOTED.

EXISTING WATER FIXTURE WERE HIGH VOLUME

What was identified

SINGLE PASS COOLING EQUIPMENT WAS NOT RECYCLING WATER AND WAS INNEFICIENT

Old Compressor

Single Pass Cooling

What was identified

COOLING TOWERS WERE INNEFICIENT

What was identified

IRRIGATION WATER WAS A MAJOR COMPONENT OF WATER USAGE

25 acres of landscaped areas

What was identified

NEEDED TO FURTHER STRESS ENERGY AND WATER CONSERVATION

Earth Day 2014

Join us for the annual Earth Day Event on April 22 at the Multi-Purpose Building from 11:00 AM to 1:00 PM. This event is coordinated by the MMAC EOSH Staff (AMP-100) and showcases earth friendly vendors (See 2013 photos below). The vendors will demonstrate how to protect and preserve natural resources; provide awareness through programs; and display new technology. There will be giveaways and food to purchase during the event. The event is provided through the MMAC recycling efforts. All FAA employees, contractors, and students are invited to attend. Attendance is subject to supervisory approval and operational requirements.

The FAA is committed to providing equal access to these events for all participants. If you need alternative formats or services because of a disability please contact the following individuals by close of business on 4/18/2014. Dave Masias @ Dave.Masias@FAA.Gov or

Shaun Elliott @ Shaun.Elliott@FAA.Gov

Water Conservation Measures

REPLACED 202 VALVES FOR URINAL AND TOILETS WITH LOW FLOW CONSERVACAP (SHORTENS FLUSH TIME)

Water Conservation Measures

Replaced 200 sink aerators from a 2.5 GPM with a 1.0 GPM sink aerator.

Water Conservation Measures

REPLACED 50 HP COMPRESSOR (SINGLE PASS COOLING CYCLE) WITH A VARIABLE SPEED UNIT

Air Cooled

Variable Speed Drive

Water Conservation Measures

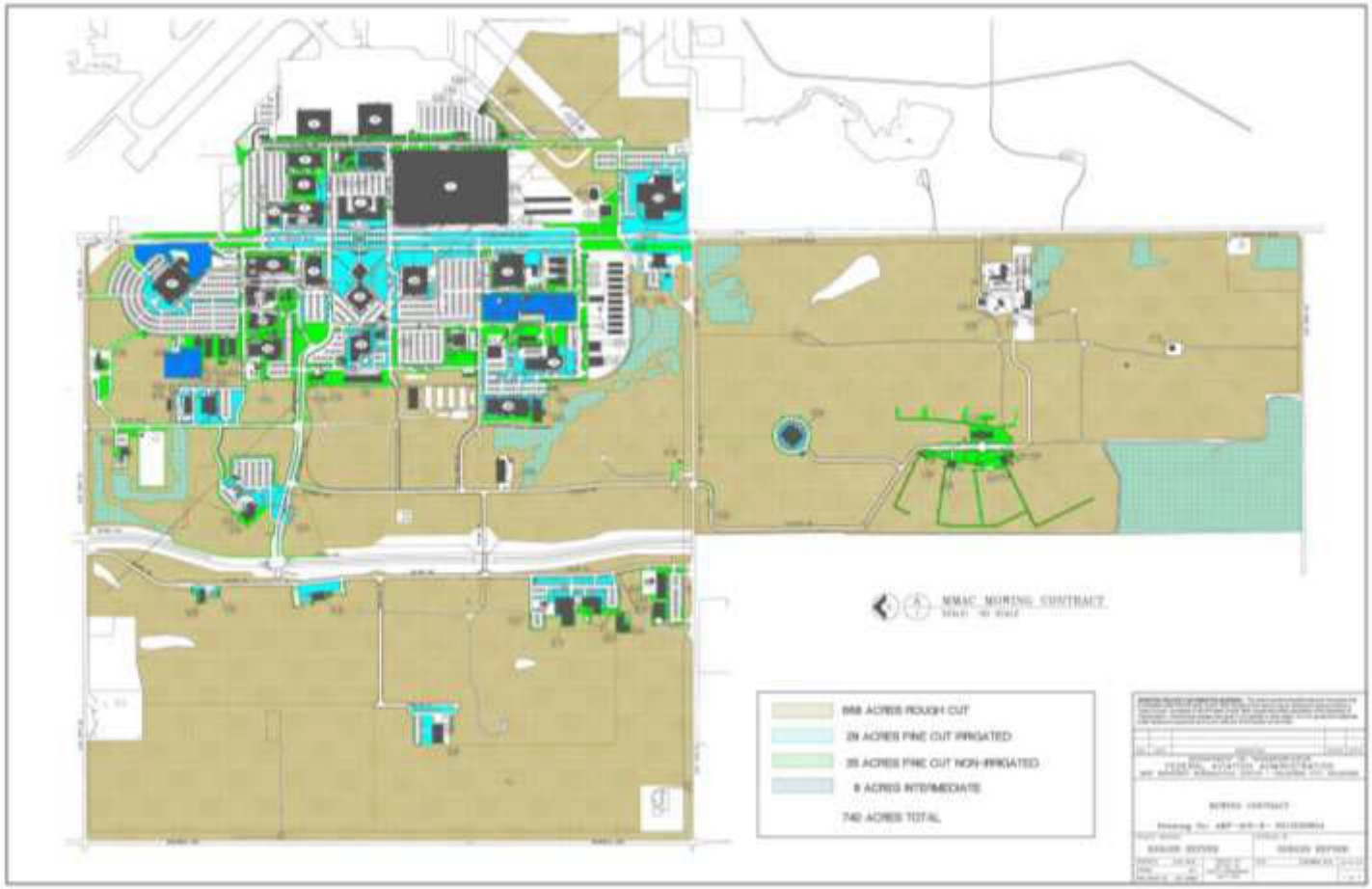
REPLACED 3 COOLING TOWERS SERVING 570,000 SF OF BUILDING SPACE

High Efficiency

Variable Speed Motor

Water Conservation Measures

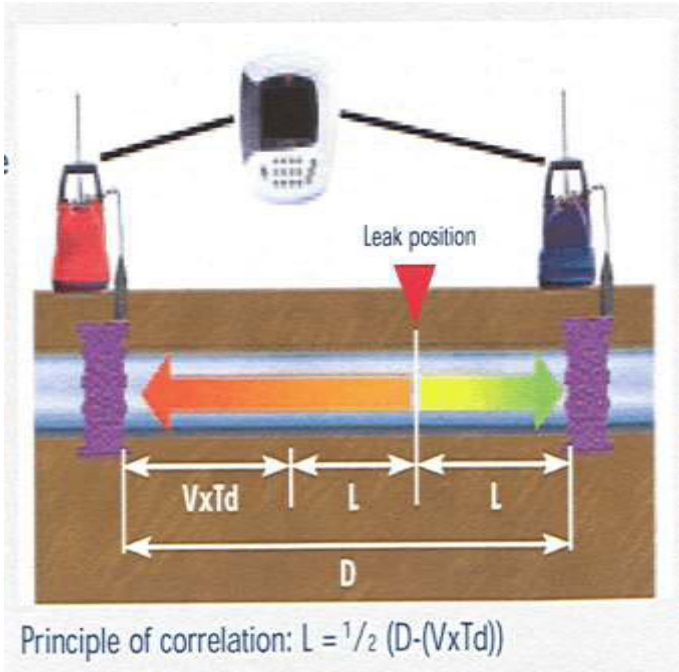
SHUT DOWN IRRIGATION W/ O&M AND SYSTEM ACTIVITIES IN PLACE



Leak Detection

On August 5, 2014 RYE Engineering started leak detection throughout our facility. The first phase was probing fire hydrants with an ultrasonic listening device.

Leak Detection



Principle of correlation: $L = 1/2 (D-(VxTd))$

- **A suspected leak was found on a fire hydrant across east of CAMI.**
- **The leak was discovered by a acoustic correlator device near a sanitary sewer manhole which lead to an 6 inch water main.**

Leak Detection

- **The leak was estimated at 150 – 200 GPM**
- **The leak was repaired on Thursday August 7, 2014 at about 1:00 PM.**

Leak Detection

Leak Detection

- **The water main was secured and the sewer pipe was replaced with PVC and backfilled.**

Leak Detection

- MMAC water leak estimated at 150,000 Gal/Day = 4.5M Gal/Month.
- The Thomas Road Warehouse (TRW) also noticed an increase in water use.
- TRW has two 1 inch water meters located in the South and Northeast outside the fence line.
- The meter on the Northeast corner that serves half of the warehouse area had a continuous flow of ¼ GPM.
- Performed an inspection on the restrooms and surrounding area and found a ice machine that was continuously purging water down the drain.
- Reported the leak to the supervisor to replace ice machine.
- Estimated savings 10,800 gallons per month.

Leak Detection

- Phase II – RYE Engineering returned mid-September.
- Continued flow study of water tower during the evening and weekends to measure flow and consumption.
- Accomplish night time flow monitoring testing to measure system leakage from daily water consumption.
- Accomplish flow based leak detection using ultrasonic flow meter.
- Make recommendations on water metering and management for the MMAC.

Water Conservation Measures

DEVELOPING LANDSCAPE MASTER PLAN FOCUSED ON XERISCAPING

Awareness

PROVIDED WATER AND ENERGY CONSERVATION INFORMATION TO PERSONNEL THROUGH OUR EOSH NEWSLETTER, DURING ENERGY CONSERVATION MONTH AND DURING EARTH DAY.

Impact

- REPLACEMENT OF VALVES – 1.8M GAL/YR - $11,000/YR
- REPLACEMENT OF SINK AERATORS – 1.5M GAL/YR - $7,900/YR
- COMPRESSOR REPLACEMENT – 5.4M GAL/YR; 57 MWH OF ENERGY - $32,000/YR
- REPLACED 3 COOLING TOWERS – SAVINGS OF 2M GAL/YR - $12,240/YR
- SHUT DOWN IRRIGATION – 15M GAL/YR - $40,000/YR
- A BETTER INFORMED CAMPUS - EASIER TO IMPLEMENT FUTURE PLANS W/ PERSONNEL INFORMED AND ENGAGED
- TOTAL WATER REDUCTION – 24M GAL/YR – 39% FROM 2007 BASELINE
- TOTAL COST AVOIDANCE - $103,140/YR

Lessons Learned

- **SAVING ENERGY AND WATER IS A MARATHON, NOT A SPRINT**
  PLAN LONG TERM BASED ON RESOURCES

- **EVERYONE IS INVOLVED**
  IT IS AN EQUAL OPPORTUNITY ACTIVITY

- **TRACKING AND DOCUMENTING PROGRESS IS A MUST**
  WE ARE NOT WALKING A TRAIL, WE ARE DEVELOPING A MAP

- **START WITH THE "LOW HANGING FRUIT"**
  WHAT WOULD GIVE YOU THE HIGHEST IMPACT WITH THE LEAST AMOUNT OF RESOURCES?
- **DON'T HESITATE TO CHANGE DIRECTIONS IF IT MAKES SENSE**
  CHALLENGES WILL COME, RE-EVALUATE/PLAN/EXECUTE

End of Presentation

Questions?

“We never know the worth of water ’til the well is dry.”
– Thomas Fuller

Thank You