# Water Conservation:

## *Accelerated Water Savings with Cloud Based Software Tools*

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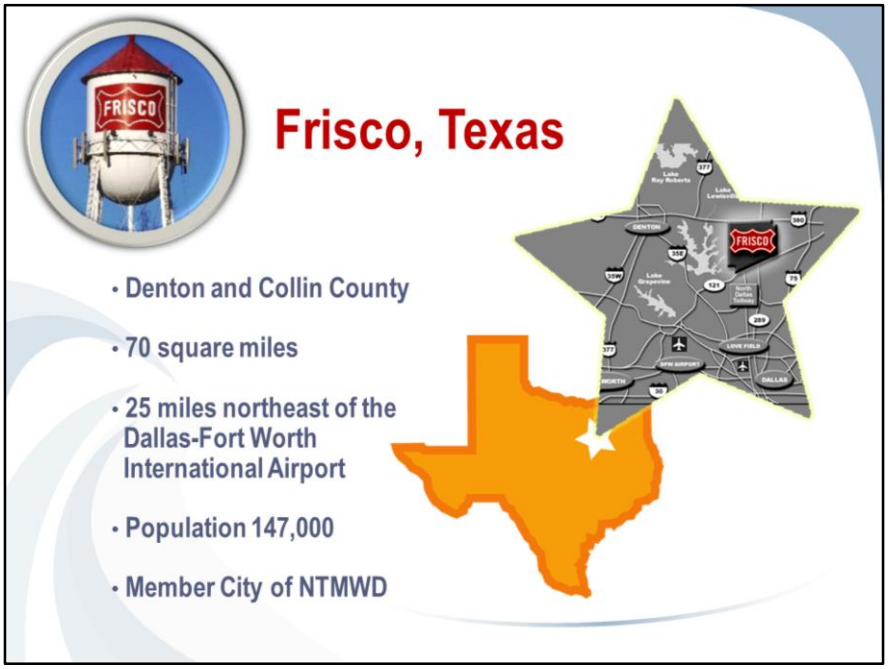
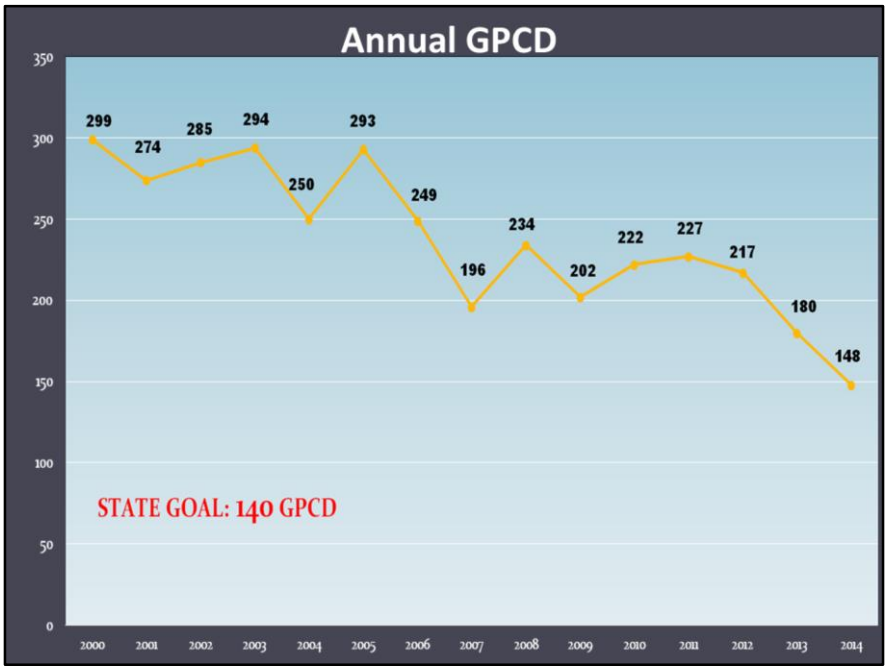
Texas Water 2015



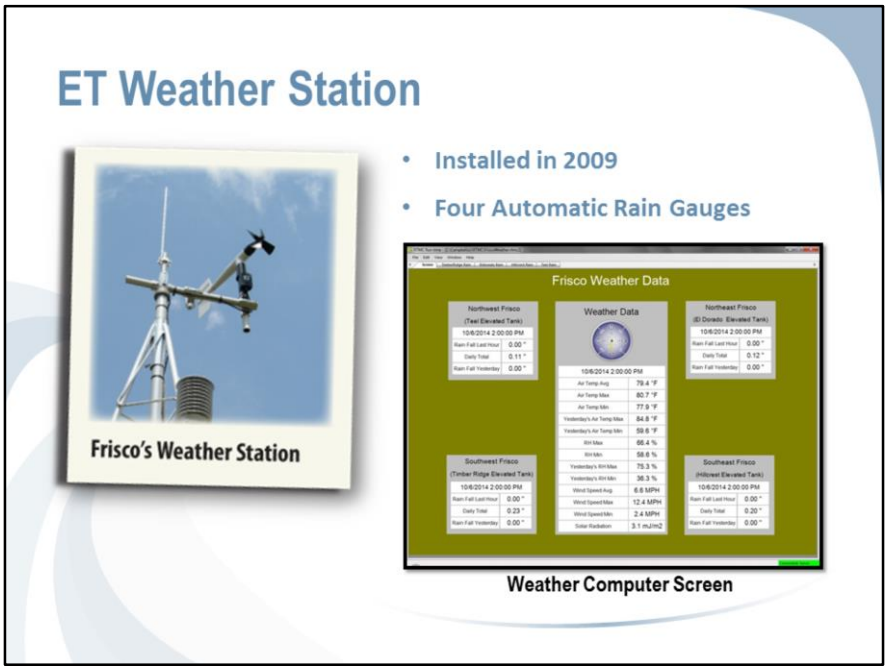

Frisco is one of the nation's top five fastest growing cities, based on data from the Census Bureau. Frisco has grown from 33,714 residents in the year 2000 to approximately 147,000 as of April 1, 2015.

What makes Frisco unique? In addition to rapid growth, it is home to FC Dallas, a major league soccer team; The RoughRiders Minor League Baseball, a farm team for the Texas Rangers; and future home of The Star, Dallas Cowboys Headquarters.

As one of the fastest growing cities in the U.S., Frisco has needed to balance a population influx with a water-taxed region.




Frisco is comprised of a demographic with historically high outdoor use of water, primarily due to installation of outdoor irrigation systems associated with new construction. Approximately 70 percent of residential water usage is for outdoor purposes. Frisco's goal is to create conservation programs that encourage residents to make responsible choices about their water use habits voluntarily, rather than simply through mandatory restrictions. Frisco decreased its GPCD from 2000 – 2014, in spite of an increase in population.

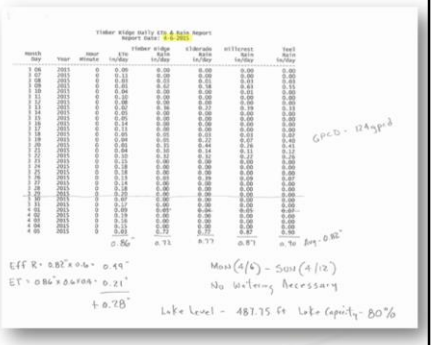



The Frisco Water Resources Department intended to take an evidence-based approach to educate water customers and to provide them with a resource to help determine the need to water their lawns & landscapes. In 2009, Frisco installed a Campbell Scientific weather station, which calculates daily evapotranspiration, and four rain gauges.

# ET Weather Station Data

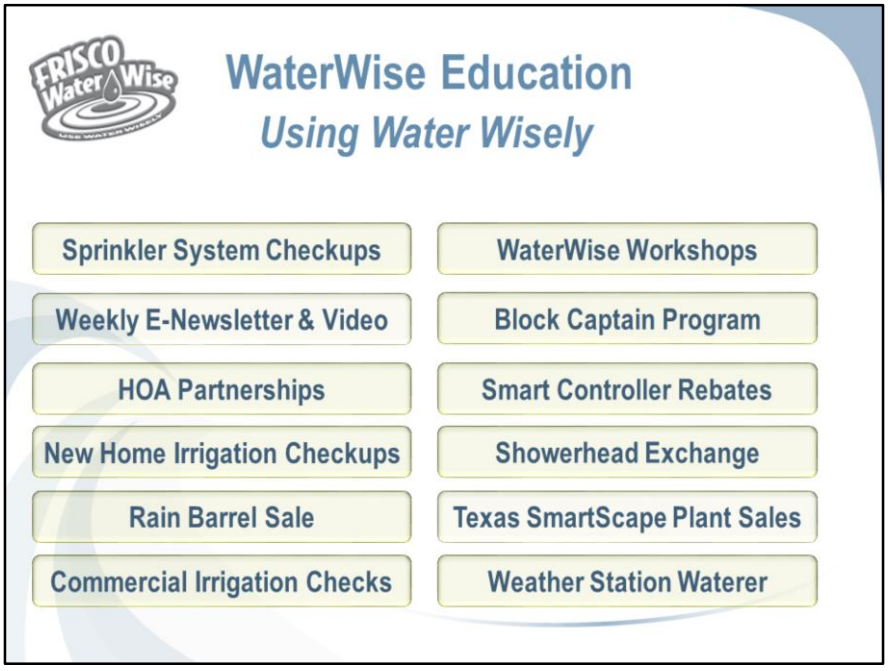
| Year | 0” | 0.25” | 0.50” | 0.75” | 1.00” |
|---|---|---|---|---|---|
| 2015 | 15 | 0 | 0 | 0 | 0 |
| 2014 | 40 | 9 | 3 | 0 | 0 |
| 2013 | 35 | 7 | 9 | 1 | 0 |
| 2012 | 31 | 9 | 11 | 1 | 0 |
| 2011 | 33 | 4 | 4 | 10 | 1 |
| 2010 | 27 | 3 | 19 | 3 | 0 |
| Total | 181 | 32 | 46 | 15 | 1 |

Weekly Lawn Watering Advice Calculations



Weather station data has been tailored to be as simple as possible, in order to help the water user more easily program their sprinkler controller. Calculations are rounded to the quarter-inch. The weekly watering recommendation is calculated on Monday, posted to the website, emailed to approximately 12,000 email subscribers, uploaded to a weekly YouTube video, and recorded onto a 24-hour telephone watering line.

Based on weather station data, no watering was necessary for 40 weeks in 2014, with an automatic sprinkler system.

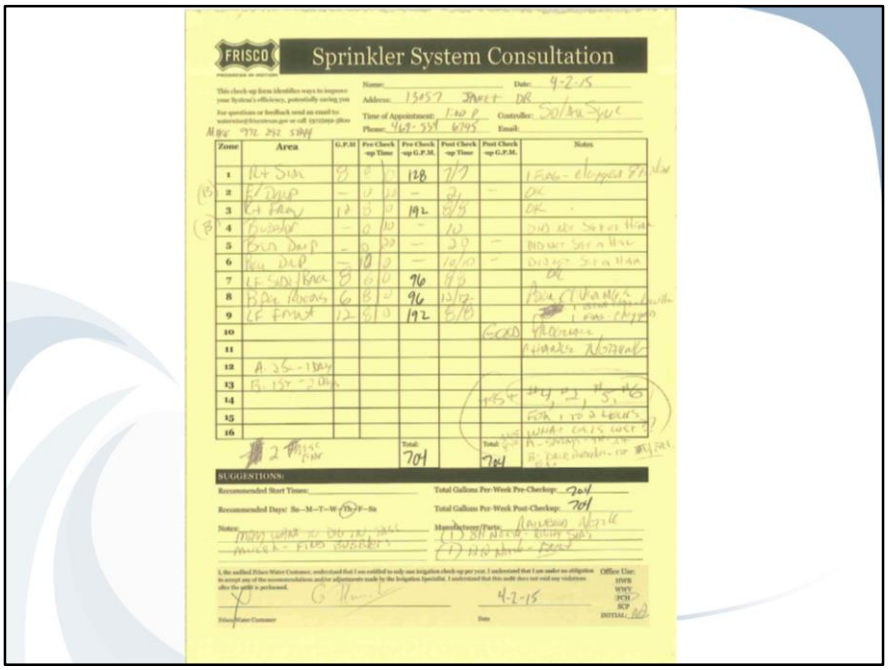



Frisco uses the data obtained from the weather station as the basis for its water conservation programs. These programs encourage residents to make responsible choices about their water use habits.

## Challenges

- Increased Number of Conservation Programs
- Increased Requirements for Information
- Tracking and Reporting
- Static Staff Levels and Increased Time Demands
- Inadequate Tools

One program which was becoming difficult to manage is Frisco's free sprinkler system checkups, which was launched in 2006. During a checkup, one of four licensed irrigation inspectors will visit a resident's home, identify inefficiencies in the sprinkler system (such as broken or misaligned heads, leaks in the system or non-optimized controller run times) and educate the homeowner how to program their controller using the Cycle & Soak method.



FRISCO

Sprinkler System Consultation

| Zone | Area | G.P.M | Pre Check -up Time | Pre Check -up G.P.M. | Post Check -up Time | Post Check -up G.P.M. | Notes |
|---|---|---|---|---|---|---|---|
| 1 | Rt Side | 8 | 0 | 128 | 7/7 | | 1 Emt - clogged |
| 2 | Ft Drip | – | 0 | – | 2/1 | – | OK |
| 3 | Rt Front | 12 | 0 | 192 | 8/8 | | OK |
| 4 | Backyard | – | 0 | – | 10 | | |
| 5 | Back Drip | – | 0 | – | 20 | – | |
| 6 | Rear Drip | – | 10 | – | 10/10 | – | |
| 7 | LF Side/Back | 8 | 0 | 96 | 8/8 | | OK |
| 8 | Back Planters | 6 | 0 | 96 | 13/17 | | |
| 9 | LF Front | 12 | 0 | 192 | 8/8 | | 1 Emt - clogged |
| 10 | | | | | | GOOD | |
| 11 | | | | | | | |
| 12 | A. 25 - 1 Day | | | | | | |
| 13 | B. 15 - 2 Day | | | | | | |
| 14 | | | | | | | |
| 15 | | | | | | | |
| 16 | | | | | | | |
| | | | | Total: 704 | | Total: 704 | |

SUGGESTIONS:

Recommended Start Times:

Total Gallons Per-Week Pre-Checkup: 704

Recommended Days: Su–M–T–W–Th–F–Sa

Total Gallons Per-Week Post-Checkup: 704

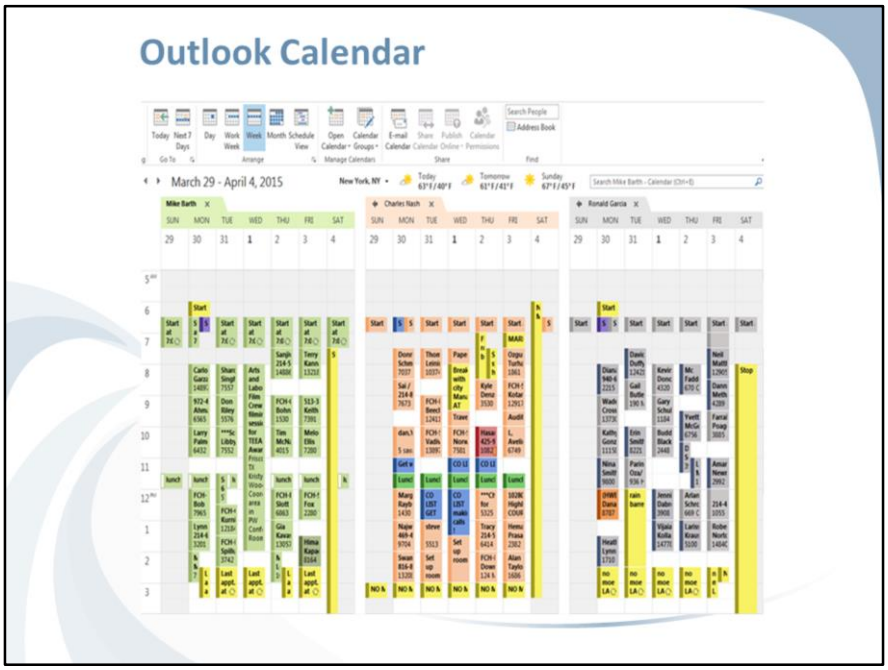
Notes:

Manufacturer/Parts:

Office Use: HWB WWC PCH SCP INITIAL:

Date: 4-2-15

During the checkup, the irrigation inspector provides the homeowner with a sprinkler system consultation evaluation. Effective programs require extra information management, such as contact information, water usage, interactions with customers and follow up. Previously, the consultation forms were scanned in and linked to an Excel spreadsheet.  Data was extracted from the consultation forms and manually entered into Excel.



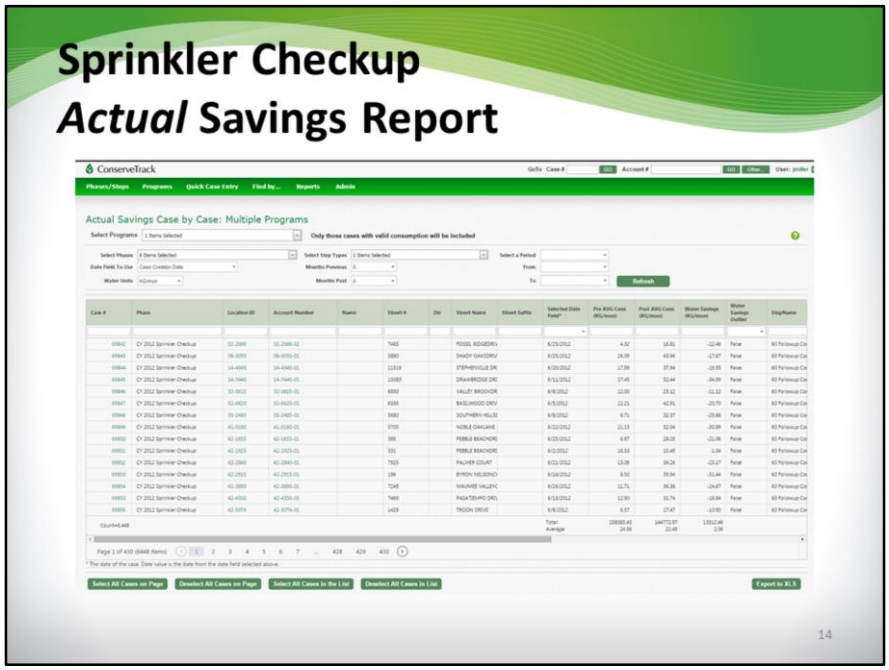

Sprinkler checkup appointments were scheduled using an Outlook Calendar.

## Patchwork of Spreadsheets Used for Tracking

**2014 Check-Up Totals**

| ACTION | Mike Barth | Ron Garcia | Charles Nash | Total |
|---|---|---|---|---|
| January | 68 | 16 | 0 | 84 |
| February | 54 | 61 | 0 | 115 |
| March | 114 | 101 | 71 | 286 |
| April | 115 | 125 | 109 | 349 |
| May | 121 | 114 | 108 | 343 |
| June | 145 | 152 | 127 | 424 |
| July | 134 | 150 | 108 | 392 |
| August | 157 | 196 | 185 | 538 |
| September | 113 | 150 | 150 | 413 |
| October | 137 | 127 | 141 | 405 |
| November | 60 | 76 | 54 | 190 |
| December | 42 | 22 | 49 | 113 |
| TOTAL | 1260 | 1290 | 1102 | 3652 |

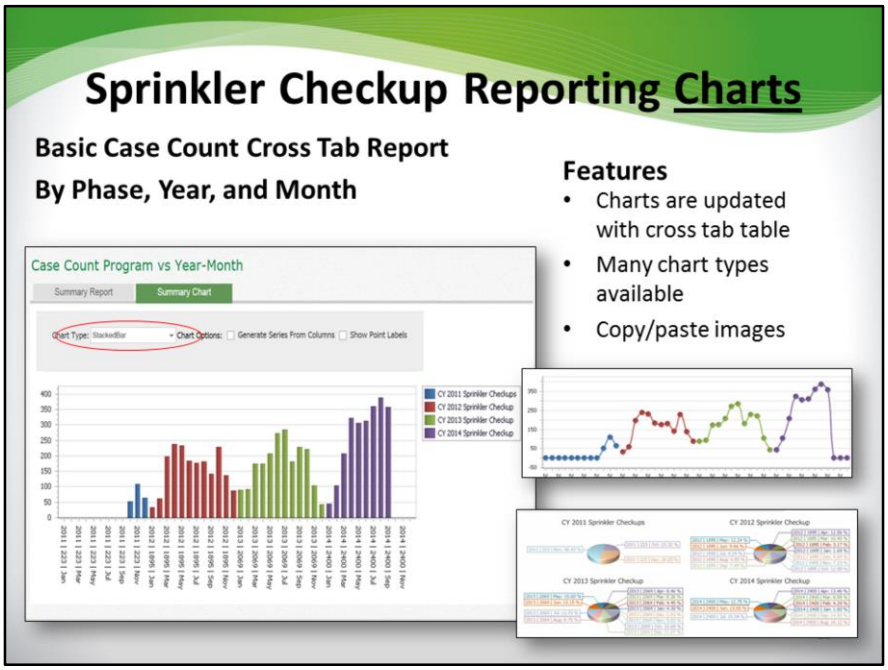
Inadequate tools resulting in a patchwork of spreadsheets and databases end up costing excessive staff time and still did not provide required reporting.




All information from the sprinkler checkup reports is now consolidated into one system. We have been able to configure custom templates with drop boxes for ease of entering data & accessing information.

The process to quantify gallons of water saved vs. pre-checkup gallons used is streamlined. Through the use of drop boxes, we can now select phases for monthly, annual, multi-year cumulative and the entire history of the program with ease.

Previously, we had not been able to easily compile data for water savings. No longer do we need to use pivot tables to capture multiple years worth of data.

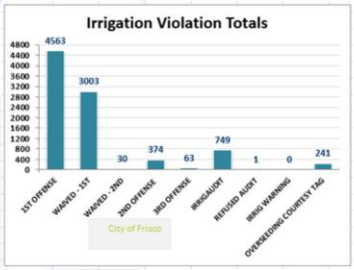



The new water conservation software has provided ease in extracting top notch visuals for targeted data. Information is easily extrapolated & manipulated into charts and presentations which can be used for HOA presentations, development of UB inserts, and materials for Block Captain volunteers. Charts and graphs are more meaningful to our water customers than presenting raw data.

The City of Frisco issued 5,000 water violations in 2014. We were in "critical" need of a cloud-based customer relationship management system which provided the entire Water Resources team constant access to data.

**Irrigation Violation Totals**

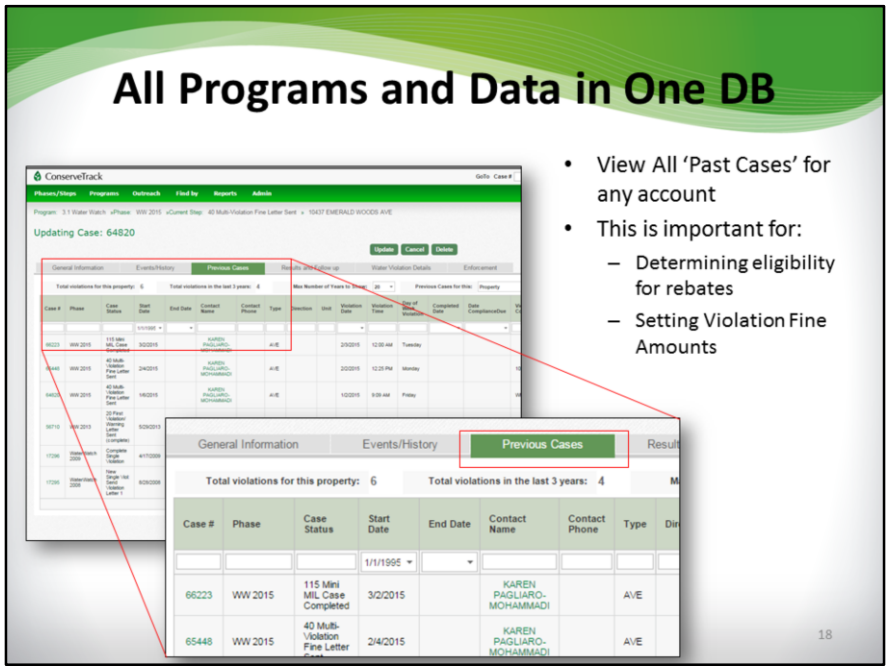
| ACTION | 12/29 to 01/04 | for 2014 |
|---|---|---|
| 1ST OFFENSE | 4 | 4563 |
| WAIVED - 1ST | 4 | 3003 |
| WAIVED - 2ND | 0 | 30 |
| 2ND OFFENSE | 0 | 374 |
| 3RD OFFENSE | 0 | 63 |
| IRRIGAUDIT | 1 | 749 |
| REFUSED AUDIT | 0 | 1 |
| IRRIG WARNING | 0 | 0 |
| OVERSEEDING COURTESY TAG | 0 | 241 |
| TOTAL | 4 | 5000 |



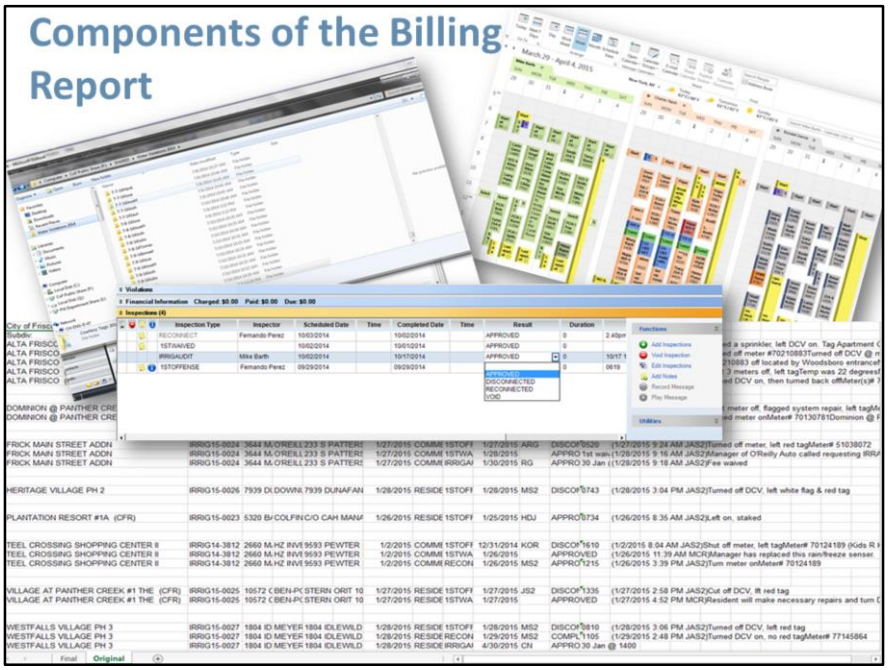

For the Period 9/27/2014 thru 10/3/2014

| Address | Last Step | Completed |
|---|---|---|
| 10708 SWEETWATER DRIVE | 1STOFFENSE | 10/1/2014 |
| 4625 ELDORADO PKWY | 1STOFFENSE | 10/1/2014 |
| 3691 BARKWOOD LN | 1STOFFENSE | 10/1/2014 |
| 4623 NEWCASTLE DR | 1STOFFENSE | 9/27/2014 |
| 11002 ROBINCREEK LN | 1STOFFENSE | 10/1/2014 |
| 15174 WOODBLUFF DR | 1STOFFENSE | 10/2/2014 |
| 9302 MIRROR FOUNTAIN CIR | 1STOFFENSE | 9/29/2014 |
| 3014 APPALACHIAN LN | 1STOFFENSE | 10/3/2014 |
| 11491 NEWBERRY DR | 1STOFFENSE | 9/30/2014 |
| 11462 STILL HOLLOW DR | 1STOFFENSE | 9/27/2014 |
| 12098 VIA BELLO CT | 1STOFFENSE | 10/2/2014 |
| 7891 RAINTREE WAY | 1STOFFENSE | 10/3/2014 |
| 7126 CHINQUAPIN DR | 1STOFFENSE | 10/3/2014 |
| 11136 SNYDER DR | 1STOFFENSE | 9/30/2014 |
| 11775 HARRISBURG DR | 1STOFFENSE | 10/2/2014 |
| 5508 HILL HAVEN CT | 1STOFFENSE | 9/27/2014 |
| 10041 DANBURY DR | 1STOFFENSE | 9/27/2014 |
| 2719 FOREST MANOR DR | 1STOFFENSE | 10/2/2014 |
| 4710 Preston Rd | 1STOFFENSE | 9/30/2014 |
| 5298 SPICEWOOD LN | 1STOFFENSE | 10/2/2014 |
| 11608 PENICK WAY | 1STOFFENSE | 10/2/2014 |
| 4528 FLORENCE DR | 1STOFFENSE | 9/29/2014 |
| 5151 HAVASU DR | 1STOFFENSE | 9/30/2014 |
| 14586 PENSHAM DR | 1STOFFENSE | 10/1/2014 |
| 60 SECLUDED POND DR | 1STOFFENSE | 10/3/2014 |
| 9815 HONEYSUCKLE DR | 2NDOFFENSE | 9/30/2014 |
| 12475 HERRINGTON DR | 2NDOFFENSE | 9/29/2014 |
| 3601 BARKWOOD LN | 2NDOFFENSE | 9/28/2014 |
| 10411 LOVING TRAIL DR | 2NDOFFENSE | 9/27/2014 |
| 3030 HOLLOWBROOK LN | 2NDOFFENSE | 10/3/2014 |
| 11232 BLANCHARD DR | 2NDOFFENSE | 10/2/2014 |
| 1074 SAHALLEE DR | 2NDOFFENSE | 10/1/2014 |
| 6777 PARKER CREEK PL | 2NDOFFENSE | 10/1/2014 |
| 4944 PRESTON RD | 2NDOFFENSE | 9/30/2014 |
| 3303 WAYCROSS LN | 2NDOFFENSE | 10/2/2014 |
| 6649 SUNDOWN TRL | 2NDOFFENSE | 10/2/2014 |
| 6001 DRIPPING SPRINGS DR | 2NDOFFENSE | 10/2/2014 |
| 5681 ARMINTA AVE | 2NDOFFENSE | 10/2/2014 |
| 5459 WIDGEON WAY | 2NDOFFENSE | 9/30/2014 |
| 4408 HEARTHSTONE DR | 2NDOFFENSE | 10/1/2014 |
| 4802 RIDGELAND DR | 2NDOFFENSE | 10/1/2014 |
| 2026 SPINDLETOP TRL | 2NDOFFENSE | 10/2/2014 |
| 12308 FOLSOM DR | 2NDOFFENSE | 9/28/2014 |
| 12013 ASHAWAY LN | 2NDOFFENSE | 9/29/2014 |
| 1484 BENT TREE DR | 2NDOFFENSE | 10/1/2014 |
| 5371 CREE DR | 3RDANDUPOFFENSE | 9/29/2014 |
| 1335 BLUE LAKE DR | 3RDANDUPOFFENSE | 9/30/2014 |
| 8198 MISTY SHORES LN | 3RDANDUPOFFENSE | 10/1/2014 |

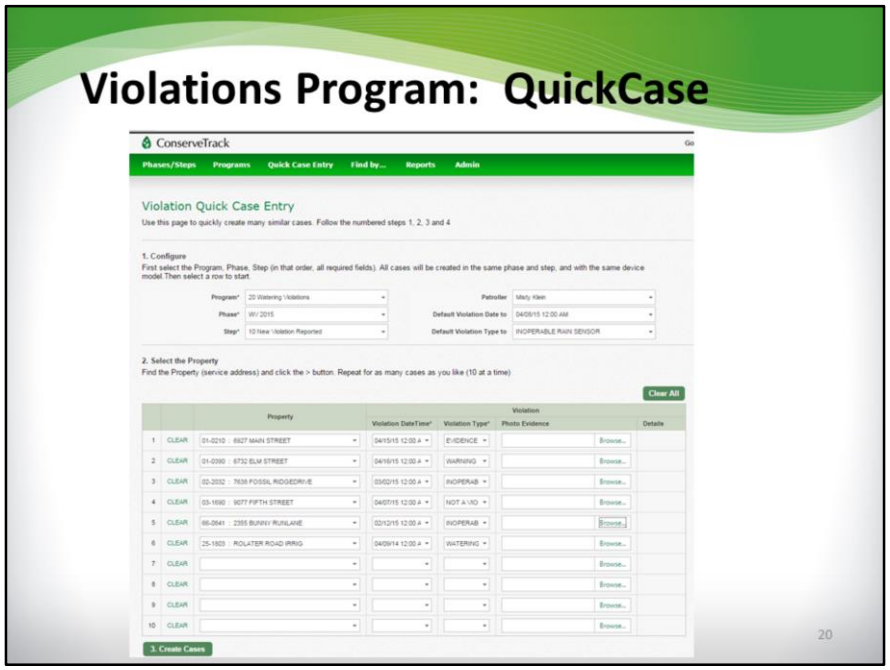
The Water Resources team is responsible for providing reports for the City Manager's office & the Department Director, who, in turn share info with our City Council. Reports must quantify programs & resources. In addition, our team compiles monthly billing reports to the Utility Billing Department for water violation fees. Fees for watering violations are assessed on the water customer's utility bill.




All data is now stored in one place. The process to determine which fee should be added to a customer's water bill is streamlined. The new reporting process has increased efficiency by about 70%. Many reports associated with Utility Billing (UB) took several hours to run, and even had to "queue" up to run overnight - which was a drain on the computer system. Now, they are "auto-fed" in the evening & "ready" to run the next day.

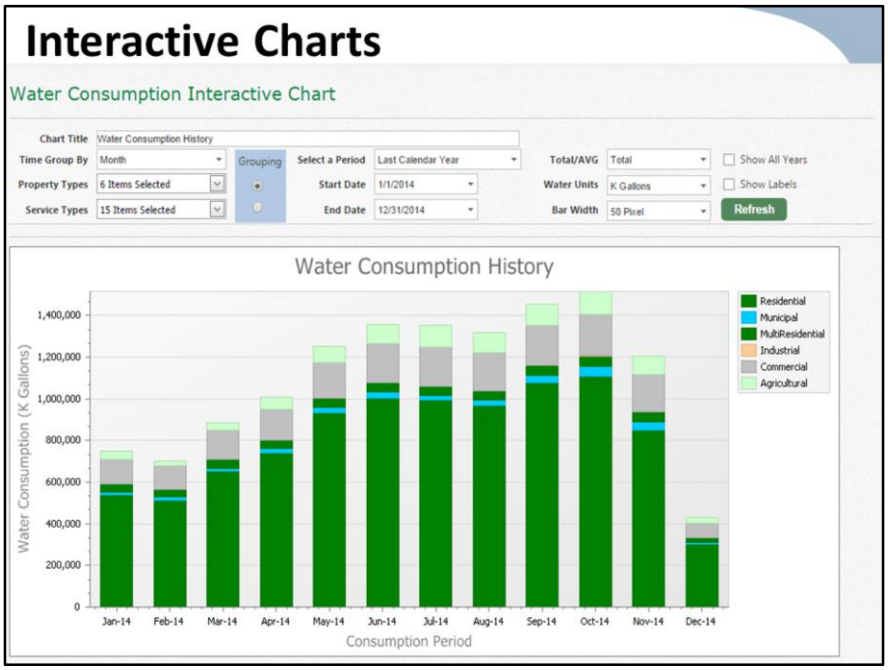



Irrigation violations are a prime example of why Frisco needed an all-encompassing software system. In the past, violations were entered into the Trakit system. Photos with a time-and-date stamp used for evidence were uploaded to a Windows shared folder. The photos were then titled by address and uploaded into Trakit. The City of Frisco offers a free sprinkler system checkup as a means to educate the water customer and "waive" the first violation. In an effort to validate the "waived" violation, a manual count was taken from the Microsoft Outlook calendar. Once validated, the checkup was "approved" by an entry in Trakit, and finally, the billing report was "queued up" to populate & run overnight and sent to UB.



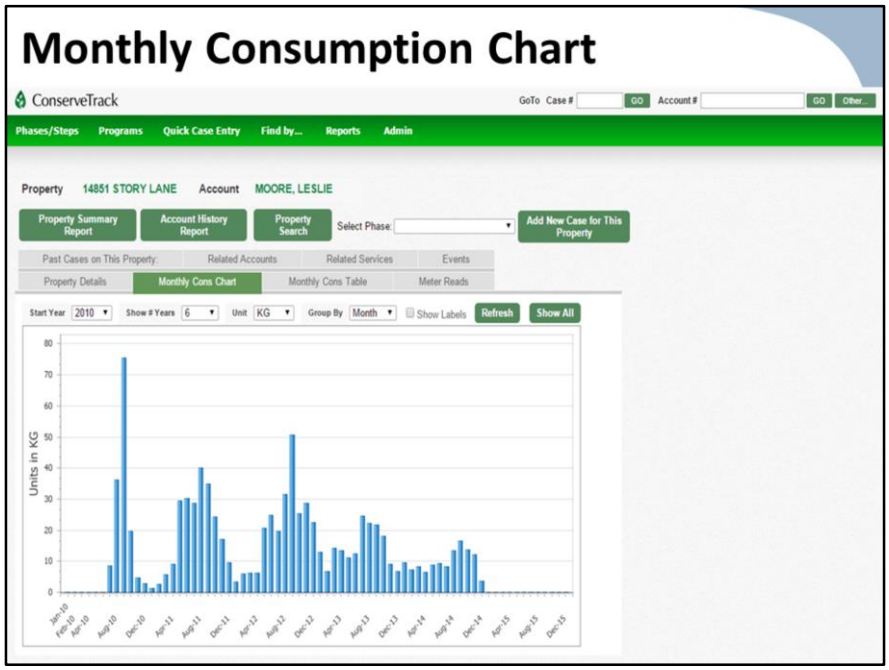

This is a sample of entering violations into our new CRM software. The savings in time is huge and replaces a tedious process. Staff no longer are faced with a manual clean-up of reports because the information is already validated and entered into one template.

The time and date stamped evidence photos are also entered into the same template. With the capability to attach photos directly into the template, staff time is significantly streamlined.




With Frisco's historical data integrated, we have been able to identify new uses for reporting data from our conservation efforts. The Monthly Water Consumption History chart (by usage category) is good example. We anticipate information from such a chart will be helpful when launching a non-residential irrigation inspection program.

More reporting is being requested of Municipalities to quantify conservation programs. Reports such as these will help to supply information and will also be beneficial for annual state reports.




We can also narrow the field to track an individual's water usage. This particular chart illustrates how the easy access to historical data combined with quick access to account and water use data streamlines procedures. By creating a case for each water customer, we can track their involvement in water conservation efforts and the impact it has on their water consumption. Previously, we had not been able to access this information, and now with the capability to interface historical conservation program data with current utility billing data, the information is quickly retrieved.

## Summary

- Using a Water Conservation DMS system drastically enhances water conservation efforts.
- Time savings are very significant, allowing staff to focus educational efforts on saving more water with less effort.
- Many tasks that were not feasible before now become routine.
- Completely new capabilities are also now possible and expansion to add new types of measures is easy.
- Reporting is much faster and many new features are available.

# City of Frisco

## Award Winning for Water Conservation

Texas Water Development Board — Municipal Blue Legacy Award – 2015 recipient

Texas Environmental Excellence Award – 2015 recipient

Texas AWWA — Bob Derrington Reclamation Award - 2015 recipient

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