Brian Vinchesi, the 2009 EPA WaterSense Irrigation Partner of the Year, is President of Irrigation Consulting Inc., a golf course irrigation design and consulting firm headquartered in Pepperell, Mass., that designs irrigation systems throughout the world. He can be reached at bvinchesi@irrigationconsulting.com or 978/433-8972.

DO YOU HAVE A DROUGHT MANAGEMENT PLAN?

If you don't, you should. Most courses only have a drought management plan if required to by an authority having jurisdiction over their water, such as a state or federal entity, but every golf course should have one. It is a lot easier to be prepared then to have to think on the fly when it is too late. Additionally, a drought management plan identifies and sets triggers to reduce water use long before you might find yourself in a drought situation.

Drought comes in many forms, not just when it stops raining. An emergency could occur that reduces or eliminates your primary water supply; mainline pipe failure on the golf course or in the municipally supplied lines, pump failure, treatment plant failure, a fire or a sink hole can all cause a drought-type condition. You never know what might happen – the trick is to have a plan.

Most states that require water-withdrawal permits for irrigation require a drought management plan as part of the permitting process. These states have certain levels of reduction that become mandatory by certain stages of drought as declared by the state, local government or water supply. With each subsequent stage of drought, water reductions increase.

For example: in San Antonio Stage 1 requires that golf courses submit a drought management plan for in-play areas of the golf course – landscape must follow a one-day-a-week restriction for landscape irrigation. Stage 2 requires, in addition to Stage 1 requirement, no watering between 10 a.m. and 8 p.m. Stage 3 is watering only allowed per city ordinance. The various stages are automatically triggered by the level of the Edwards aquifer, which is the city's main water supply. Stage 3 is 640 feet, Stage 2-650 feet and Stage 1-660 feet above sea level. So the smaller the number the more impact. There is no subjectivity to these numbers as they are science-based.

In Las Vegas, each golf course must submit a water-use reduction plan. Minimally, the plan must contain a physical description of the course with detailed descriptions of irrigated areas, itemized accounting of water use for the calendar year, a review of spray irrigation efficiency, and a description of key water-use reduction

(continued on page 52)

Massachusetts Drought Levels

Action Levels	Irrigated Tees & Greens	Irrigated Fairways	Irrigated Roughs	Irrigated Landscape & Ornamentals
Normal	100%	100%	100%	100%
Advisory*	100%	80%	50%	No Irrigation Allowed
Watch*	100%	60%	No Irrigation Allowed	No Irrigation Allowed
Warning*	100%	40%	No Irrigation Allowed	No Irrigation Allowed
Emergency**	TBD	TBD	No Irrigation Allowed	No Irrigation Allowed

*Nonessential outdoor irrigation use shall not occur between the hours of 9 a.m. and 5 p.m., except that hand-watering of hot spots may occur at any time.
** Mitigation actions to be determined by the Governor's Emergency Proclamation.

(continued from page 50)

strategies and timelines for implementation.

We all know Texas is going through severe drought and Las Vegas is a dry city, so drought restrictions are to be expected. Let's look at water use restrictions for a wetter climate. In Massachusetts, as the drought worsens (advisory, watch, warning, emergency) the amount of water used is restricted by percentage as shown in the table on page 50.

So what are the major components that might go into a drought management plan? Well, if you are in a state with very specific reduction points like Massachusetts, then the water-use reductions in your plan would mimic their requirements. Pennsylvania has similar percent reductions, as do other states. These type reductions can be ambiguous, though. What if you have sprinklers that throw both on the fairway and in the rough, such as on a double row system? Can you operate any of these sprinklers if you are not allowed to water the rough?

Best management practices are the best place to start for any water management or drought plan. You should also list all of your water-conservation practices. Here is a partial list of items that may be required or should be included in the plan:

- Metering your use – if you don't know how much you're using how can you manage it?
- A calibration schedule for your meters
- Lining ponds
- Irrigation system maintenance and inspection schedule
- Installation of moisture sensors and weather stations
- Central control systems
- Aeration schedule
- Use of non-irrigated area (natural areas?)
- Alternative water sources
- Raising turf height
- Drought tolerant turf species
- Employee training

The plan should also outline your procedures and process that you will undertake when there is little or no rainfall even before there is a drought declaration. If your plan doesn't start until there is a drought, then it may be too late. Keep in mind also that a drought management plan doesn't just entail water and irrigation systems. It includes an overall approach to reducing the use of water on the golf course. To accomplish this, you may need to train your members/customers. They will need to understand that in a drought the amount of water you have to work with is less than ideal. This can be accomplished with informational sheets, email, blogs, newsletter articles and social media.

With a little thought and some staff input a drought management plan can be developed. It is much better to develop the plan when you are not in a drought and have it on the shelf then be forced to quickly come up with a drought plan when you're already in one. **GCI**