

Irrigation Assessments

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Handouts for this talk

WaterWonk.us/assessment

Possible irrigation assessment workshop

September 13

Concord Senior Center

9:30 am – 11:00 am (classroom)

12:00 pm – 2:00 pm (hands-on in the field)

Suffering irrigation systems need you!



You don't have to be an irrigation ninja



Be creative - design your own process





Helpful Tips



- Find out the primary reason the client contacted you, and address those concerns first. Show the client you can listen.
- Establish your price on first contact. Be careful about giving a fixed fee!
- Ask the client to fill out a questionnaire before your visit, to optimize your time at the site.
- Establish up front who will do the repairs and/or upgrades.
- Ask the client if they will accompany you on the assessment.



- Stress to the client that the first assessment visit is for observing. This repair and that tweak, however small adds up.
- Try to convince them that it is best to check the whole system. You may discover things nobody was expecting.
- Be very careful about tinkering with the system physically, to avoid the “It was working before you did that” syndrome
- Look up the property beforehand on Google Earth. It could be helpful to print out some satellite images to make notes on.

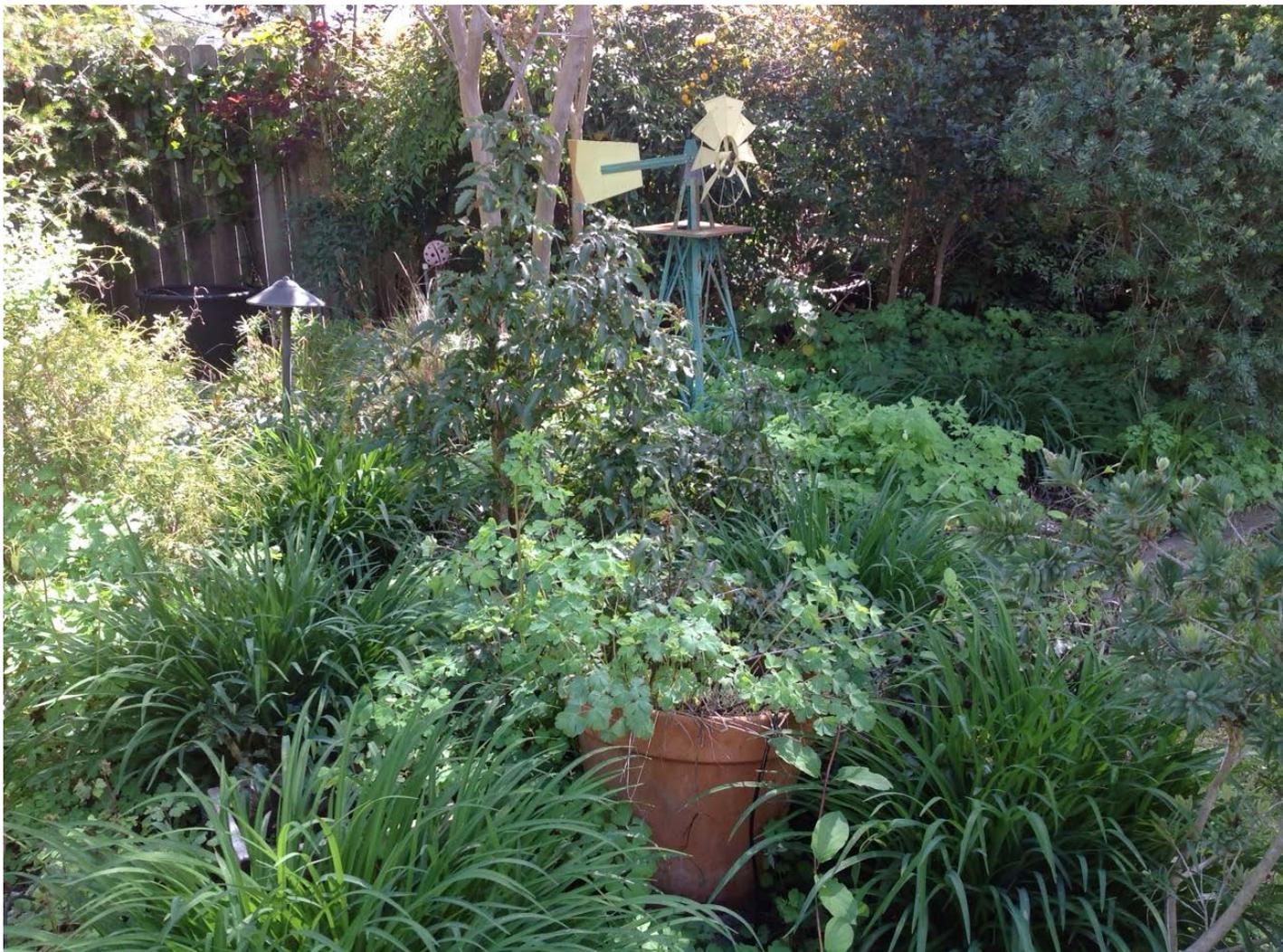


- When you arrive, don't just start turning things on. Chat with the client first, and develop a relationship of trust. Let them tell you their perceptions and concerns.
- Ask the client to send you a few photos of their yard up front because...

You could get this...



Or you could get this!



You most likely won't get this (darn!)





- You could record your notes orally on a mobile device, using a voice recording app.
- You could either transcribe the notes yourself into a written report, have them transcribed professionally, or send the voice recording to the client.
- If you record the assessment, separate each zone into a separate recorded file, and title each recording as to its zone number.
- Ways to send large files (recordings)
 - WeTransfer - (this is the easiest)
 - 7-Zip
 - Dropbox
 - Box.com
 - MediaFire

Bare bones of irrigation systems

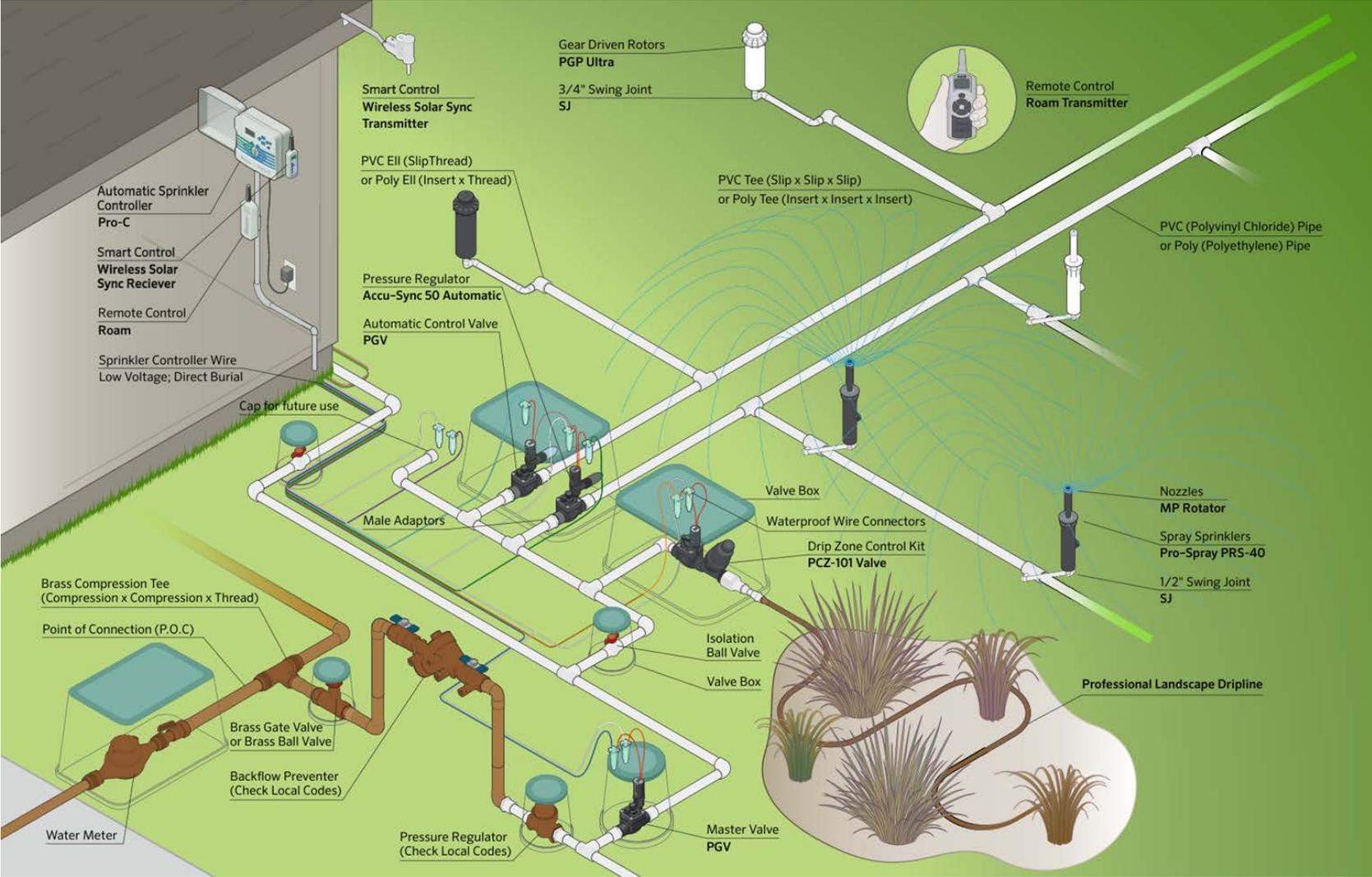
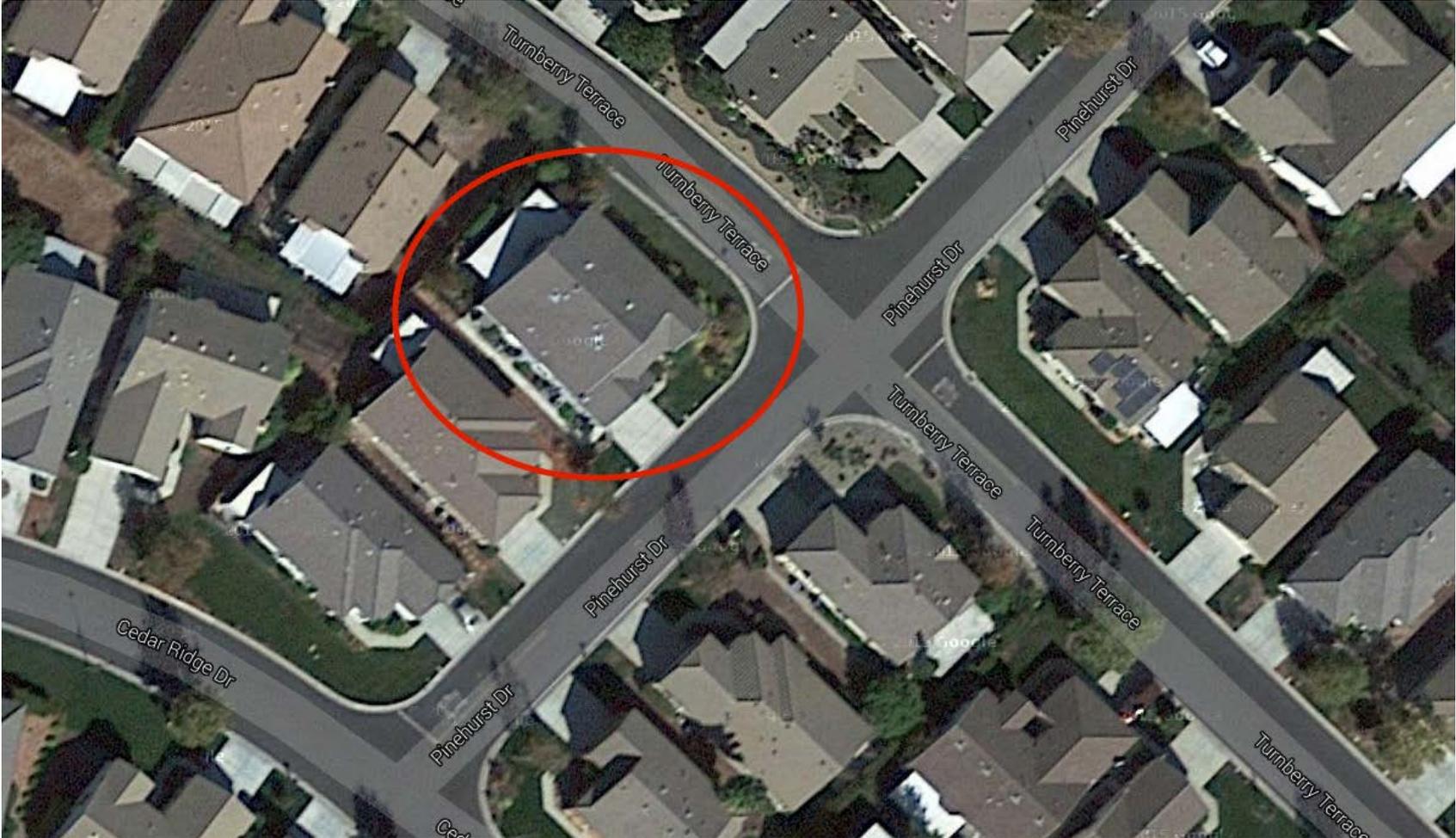


Diagram courtesy of Hunter Industries

Pull up the satellite image



Front of house



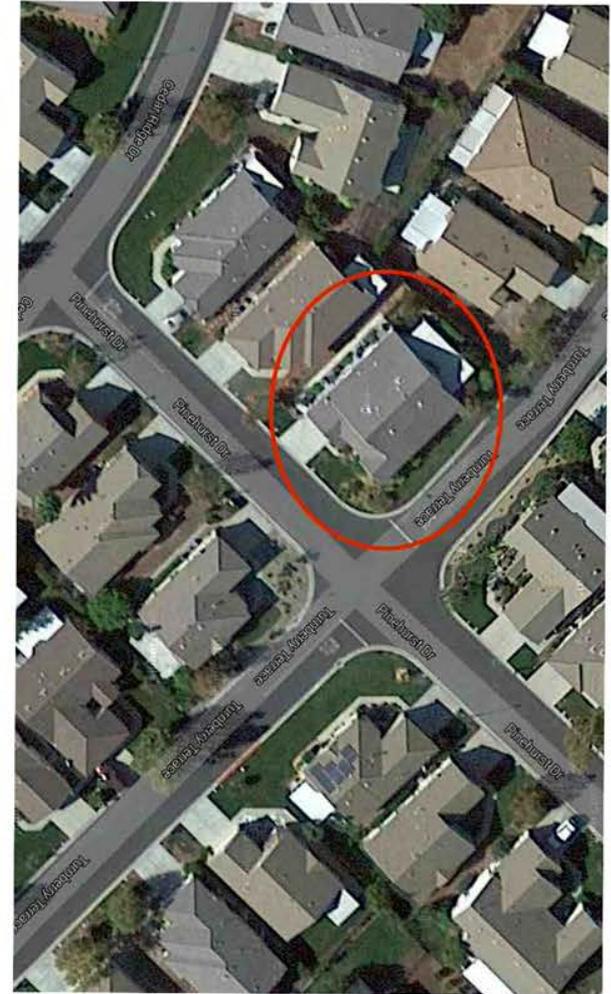
Front of house



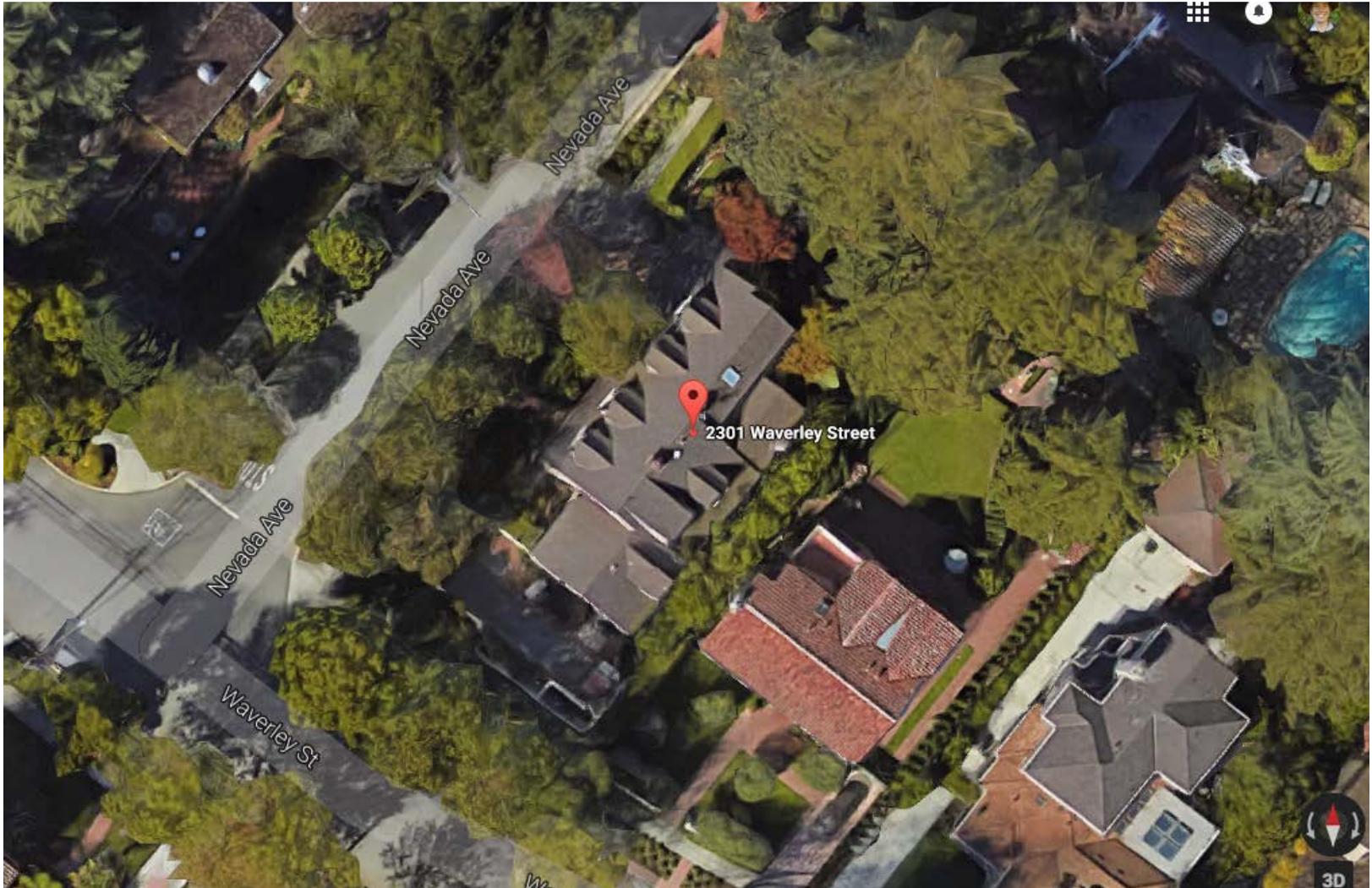
Northeast side



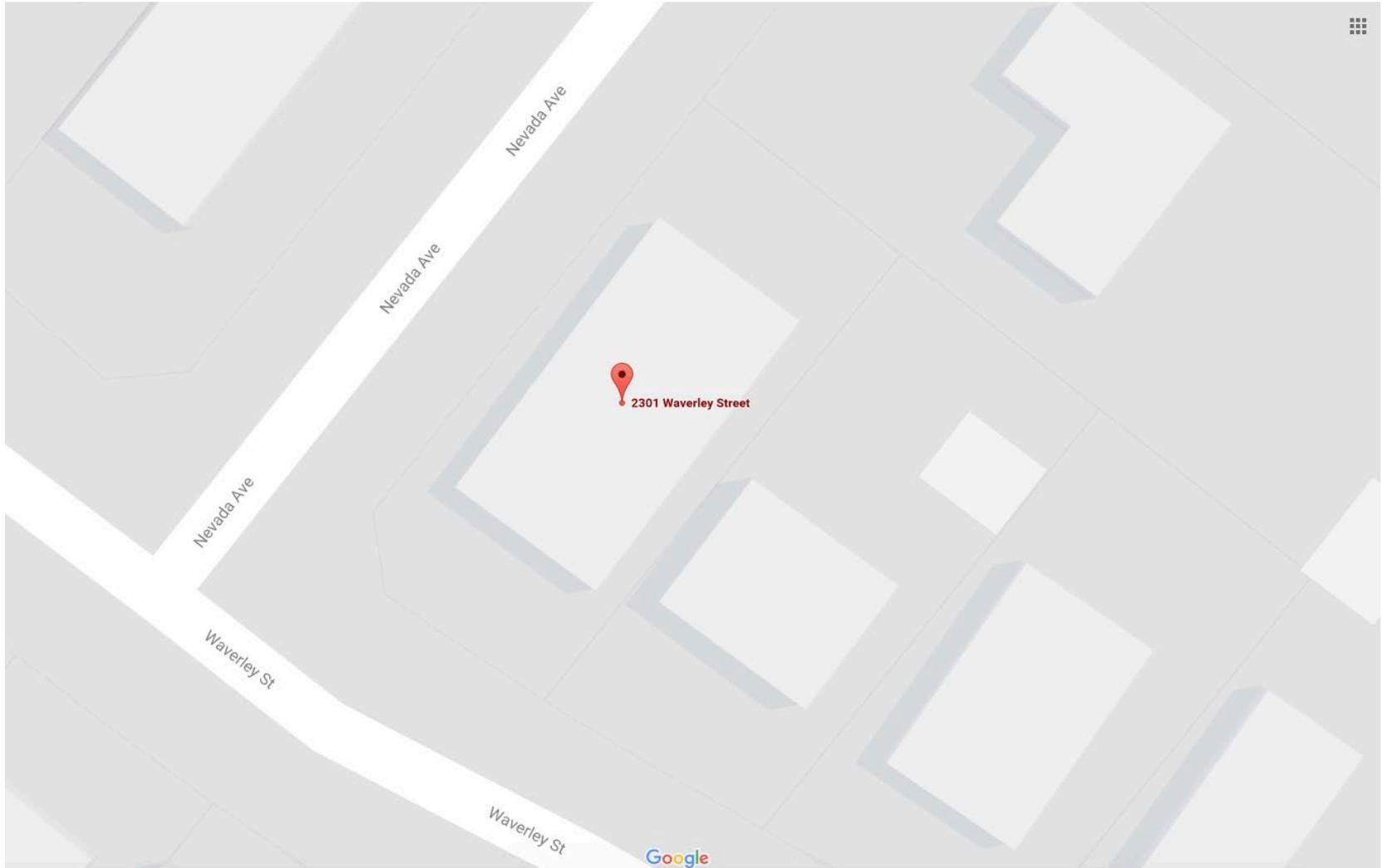
Northeast side



Satellite image not always the best way to go



So go to the map image



It's not always just about the irrigation

Sequoia sempervirens: High

Pyrus calleryana: Moderate

Baccharis pilularis: Low

These plants are on the same zone



Botanical names not needed



Watch for the occasional cool oddity



Or the occasional backflow preventer that's a foot taller than you





Useful tools

Pressure and flow



Copyright © 2010 SprinklerWarehouse

Pressure gauge with hose threads



The importance of pressure gauges



You can also use that pressure gauge here



A failed experiment (dang!)



Sprinkler adaptor

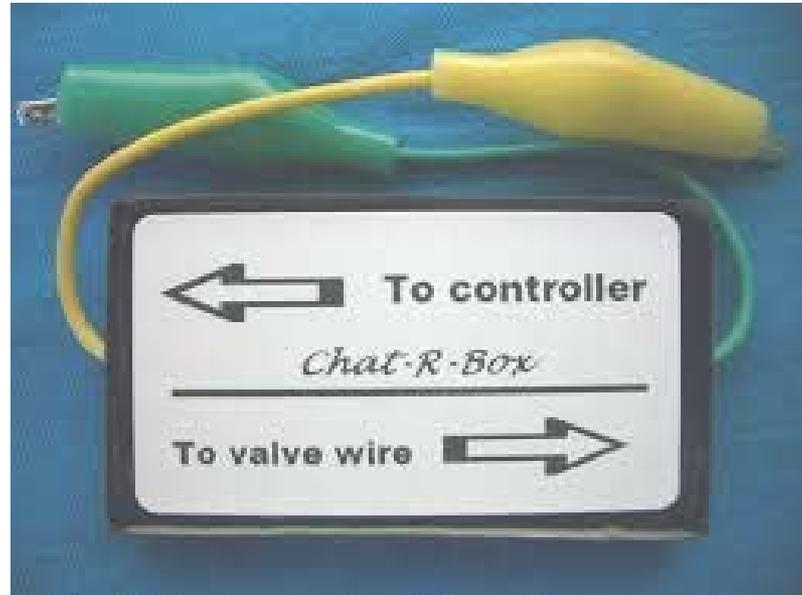


Sprinkler pop-up holder tool



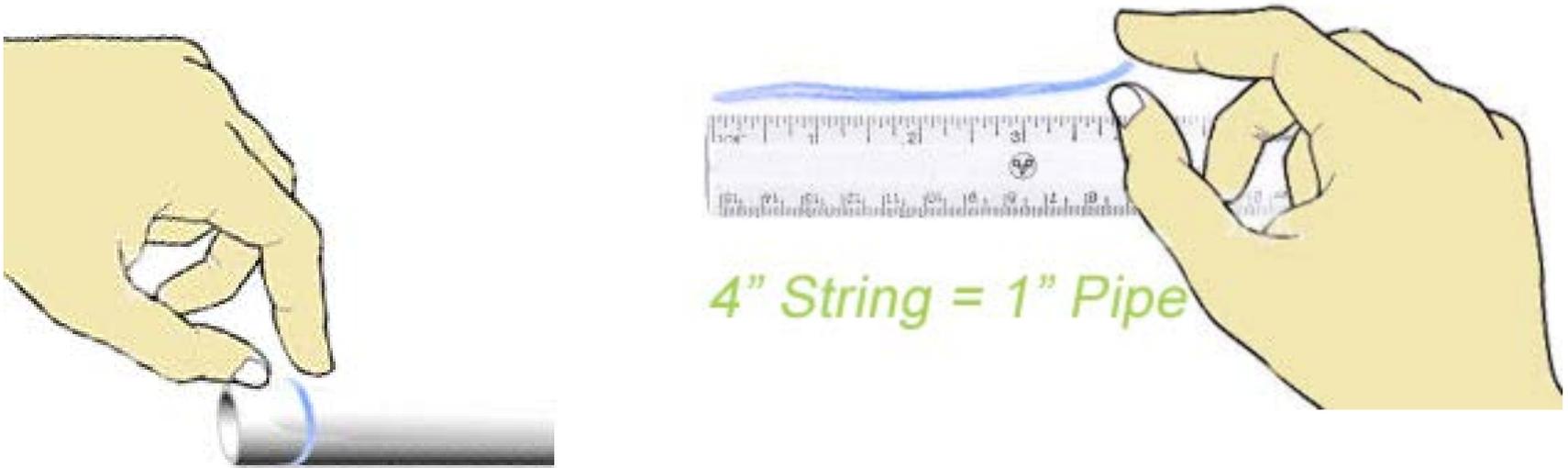
Image from [HomeDepot.com](https://www.homedepot.com)

Simple valve locator



Determining pipe size with a string

<http://www.irrigationtutorials.com/how-to-find-the-size-of-a-pipe/>



Images from SprinklerWarehouse.com

The rest of the tools

- Hand rake for clearing mulch from drip lines
- Soil knife (hori-hori) for digging in soil
- Pruners
- Tiny screwdriver
- Standard screwdriver
- Wire strippers (optional)
- Multi-meter or voltmeter (optional)
- Soil probe



More of the rest of the tools

- Flags
- Channel locks or pliers
- Cell phone for taking pictures (or camera)
- Measuring tape
- Trenching shovel
- Permanent marker
- Duct tape (why not?)



Let's review the handout



Pre-Assessment Client Questionnaire

Pre-Assessment Client Questionnaire

Questions for clients to consider before the appointment

Provide this questionnaire to the client ahead of time, so that they may consider the answers, and minimize your time spent on the site looking for things. You can also revise this list to suit your workflow.

General

1. What is the primary reason you contacted us?
2. Will you be accompanying me when I assess your irrigation?
3. Is your irrigation supplied by public water supply or well?
4. If it's the public water supply, who is your water company?
5. Are you on water restrictions? If so, what are they?
6. Do you have any pets?
7. What wild animals have you seen on your property?
8. Do the plants seem healthy or suffering?

History and documentation

9. When was the irrigation installed, and by whom?
10. Is there an irrigation plan and/or as-built drawing?
11. Are there photos that were taken during the installation of the irrigation?
12. When was the landscape installed, and by whom?
13. Is there a landscape plan?
14. Did you have the irrigation installed, or did it come with the house?
15. Do you know where the zones in the system water, or has that always been left up to someone else?
16. Is there a zone guide for the controller that tells where all the zones water?
17. Is there a written irrigation schedule?

Irrigation components and their locations

18. What make and model of controller(s) do you have?
19. Is there a remote control for the controller?
20. Do you know where all of your irrigation valves are?
21. Do all of the zones turn on from the controller (do they work)?
22. Where is your water meter?
23. Where is your main shut-off valve to the house?
24. Is there a separate shut-off valve for the irrigation?
25. Are there any leaks or breaks that you know of?
26. If you have drip, is it covered by mulch, or possibly buried even deeper?

Upkeep and maintenance of the system

27. Who maintains the irrigation system and/or makes repairs?
28. Who programs the controller?
29. Are you having to do any hand watering?

Could be a Google Form

Pre-Assessment Questionnaire

Please answer as many of the following questions as you can, to optimize our time on the assessment

What is the primary reason you would like to have your irrigation assessed?

Your answer

Will you be accompanying me when I assess your irrigation?

Your answer

Is your irrigation supplied by public water supply or well?

Your answer

If public water supply, who is your water provider?

Your answer

SUBMIT

Client questionnaire - general

1. What is the primary reason you contacted us?
2. Will you be accompanying me on the assessment?
3. Is your irrigation water from public water supply or a well?
4. If it is public water supply, who is your water provider?
5. Would you like me to research irrigation rebates your water provider may be offering?
6. Are you on water restrictions? If so, what are they?
7. Do you have any pets that either live there, or visit?
8. What wild animals have you seen on your property?
9. What is the general health of your plants?

Client questionnaire - history and documentation

1. When was the irrigation installed, and by whom?
2. Is there an irrigation plan and/or as-built drawing?
3. Are there any photos that were taken during the installation of the irrigation system?
4. When was the landscape installed, and by whom?
5. Is there a landscape plan?
6. Did you have the irrigation installed, or did it come with the house?
7. Do you know where the zones in the system water, or does anybody else know?
8. Is there a zone guide for the controller that tells where all the zones water?
9. Is there a written irrigation schedule?

Client questionnaire - components and their locations

1. What make and model of controller(s) do you have?
2. Is a remote control for the controller?
3. Do you know where all your irrigation valves are?
4. Do all of the zones work from the controller?
5. Where is your water meter for the property?
6. Do you have an irrigation-only water meter?
7. Where is the main water shut-off valve to the house?
8. Is there a separate shut-off valve for the irrigation?
9. Are there any leaks or breaks that you know of in the irrigation?
10. If you have drip, is it covered by mulch, or possibly buried even deeper?

Client questionnaire - upkeep and maintenance

1. Who maintains the irrigation system and/or makes repairs?
2. Who programs the controller?
3. Are you having to do any hand watering of the landscape?



The Process

Walk Through Site Evaluation

Irrigation evaluation form

This form was developed for the Green Gardener training.

You can find it in the Box.com folder.

Find the link here:

WaterWonk.us/assessment

	Station Number								
	1	2	3	4	5	6	7	8	9
Irrigation System and Landscape Description									
Plants									
Plant types: Warm Season, Cool Season, Mix, Dichondra, Ornamental, Drought Tolerant, Vegetables, Trees w/mulch, Ground Cover									
Valves not separated by plant water requirements									
Valves not separated for sun exposure									
Area over-watered									
Dry spots									
Soil compaction – need to aerate									
Excess grass thatch									
Needs mulch									
Sloped area									
Run – off									
Ponding near plants									
System type: Rotor, Spray, Bubbler, Drip									
Sprinkler Systems									
Broken or clogged heads									
Heads/nozzles not matched									
Uneven or extended head spacing									
Low head drainage									
Spray pattern blocked or misdirected									
Incorrect spray arc									
Overspray									
Sunken heads									
Heads not vertical to ground									
Unequal pressure/unequal discharge rate									
Misting due to high pressure									
Low pressure									
Broken/leaking valve or pipe									
Drip Systems									
Pinched or broken tubing									
Tubing pulled off of emitters									
Emitters too close to plant									
Low pressure causes flow vs. drip									
Missing/broken emitters									
Clogged emitters									
High pressure									
Comments: _____									

Site Information form

Site information

Site address _____
City _____
Water provider _____
Designer _____
Date _____

Contact

Contact's name _____
Contact's email address _____
Contact's phone _____

Water Source

Meter location _____
Meter size _____
*Static pressure at water meter _____
*Static pressure at POC (if elevation different from water meter) _____

Which of the following is the water source for this drip system?

1. City water _____ *POC before house _____ *POC after house _____

2. Hose bib (downstream of house pipes) _____
 - a. Size of smallest diameter pipe upstream of hose bib _____
 - b. Static pressure at hose bib _____
 - c. Available flow in gpm (if using hose bib as POC) _____
 - d. Maximum design flow for a zone (75% of available flow) _____

3. Well _____ Pump pressure _____ Pump flow _____ Filtration _____

Is there backflow prevention? Yes _____ No _____

Backflow prevention device (type and size) _____

Backflow prevention properly placed? _____

Controller make and model _____

Rain sensor or weather sensor? Yes _____ No _____

**Static pressure can be acquired from either the water provider or the fire department, if there is no pressure gauge*

If POC is **higher in elevation than the meter, decrease static pressure by .433 psi for every foot of difference. If **lower**, increase static pressure by .433 psi for every foot of difference.*

** POC stands for point of connection (whether before house plumbing or after)*

*Soil Type

Sand _____
Sandy Loam _____
Loam _____
Clay Loam _____
Clay _____

Assessment Process

Assessment Process for Each Zone:

General Zone Info

- Zone number at controller
- Description of plant material and general area
- Exposure
- If area is planted, is there mulch?
- Overall description of how the plant material looks currently
- How old are the plants in this zone? Are they established?
- Is the soil moist or dry before running the zone?
- Method of irrigation
- Client input about this zone or general area
- Is there a pressure regulator on this zone? If so, what is the psi reading on it?
- Flow reading
- Pressure at the valve (if possible)
- Size, make, and model of valve
- Size of pipe upstream and downstream of the valve
- Does the valve take too long to either open or close?
- If possible, note the names of some representative plants in each zone to determine the ramifications of mixed zones and how they are mixed

Drip Zone Observations

- If there is mulch, is the drip covered by the mulch?
- If drip, is there a filter on this zone? If so, what condition is it inside?
- If drip grid, emitter spacing, row spacing, and flow rate of emitters
- If point source, type of emission device
- If drip, are there mixed-application-rate components in this zone?
- What is the pressure at the end of the zone?
- Any kinks, leaks, or breaks?

Sprinkler Zone Observations

- If there are sprinklers, are they spraying mulch?
- Pressure at the first sprinkler
- Pressure at the last sprinkler
- First time running the zone, note how many minutes to runoff, if possible
- Type of sprinklers and nozzles
- Mixed nozzles or irrigation type?
- Are there any sunken or tilted sprinklers?
- Are there any bad nozzles?
- Leaking sprinkler heads or seals?
- Is there any overspray?

General Observations

- For scheduling: If sprinklers or drip grid, find out the precip rate of the zone
- Do there appear to be any leaks or breaks?
- Are there any obvious repair or upgrade recommendations?
- Does the irrigation application rate match the soil?



The following 5 slides give suggestions for what to look for during the assessment. It can be overwhelming, so know that these are only suggestions. Feel free to slice and dice as you choose.

Remember, create your own process.

Process for each zone - slide #1



General zone info

- Zone number at controller
- Description of plant material and general area
- Exposure
- If area is planted, is there mulch?
- Overall description of how the plant material looks currently
- How old are the plants in this zone? Are they established?
- Is the soil moist or dry before running the zone?
- Method of irrigation

Process for each zone - slide #2



General zone info (continued)

- Client input about this zone or general area
- Is there a pressure regulator on this zone? If so, what is the psi reading on it? What is the flow range on it?
- Flow reading from the water meter
- Pressure at the valve (if possible)
- Size, make, and model of valve
- Size of pipe upstream and downstream of the valve
- Does the valve take too long to either open or close?
- If possible, note the names of some representative plants in each zone to determine the ramifications of mixed zones and how they are mixed

Process for each zone - slide #3



Drip zone observations

- Is the drip covered by mulch?
- Is there a filter on this zone? If so, what condition is it inside?
- If drip grid, emitter spacing, row spacing, and flow rate of emitters
- If point source, type of emission device
- Are there mixed-application-rate components in this zone?
- What is the pressure at the end of the zone?
- Any kinks, leaks, or breaks?
- Can you see water coming out of all of the emitters

Process for each zone - slide #4



Sprinkler zone observations

- Sprinklers take too long to pop up?
- Are the sprinklers spraying mulch?
- Pressure at the first sprinkler
- Pressure at the last sprinkler
- First time running the zone, note how many minutes to runoff, if possible
- Type of sprinklers and nozzles
- Mixed nozzles or irrigation type?
- Are there any sunken or tilted sprinklers?
- Any blocked sprinklers?
- Are there any bad nozzles?
- Leaking sprinkler heads or seals?
- Is there any overspray?

Process for each zone - slide #5



General observations

- For scheduling: If sprinklers or drip grid, find out the precipitation rate of the zone
- Do there appear to be any leaks or breaks?
- Are there any obvious repair or upgrade recommendations?
- Does the irrigation application rate match the soil?



The Report

Be brief and concise!



Be factual, not judgmental



Don't throw others under the bus



Basic structure of the report

Cover page

Dear Mr. Client,

I performed a complete irrigation system check on May 3, 2016. Following are the observations and recommendations that resulted from that system check.

Etc...

Sincerely, Irrigation person



Assessment

Station #1

Front lawn Fixed spray, mostly Rain Bird 1800 4" spray heads

Observations

- Sprinkler nozzles of different types
- The sprinklers took a long time to pop up
- Some of the sprinklers have water spurting out of the base of the popup riser (wiper seal)

Include any relevant photos to support observations

Recommendations

- Change out existing nozzles to rotary nozzles
- Replace sprinkler heads that are spurting at the wiper seal
- Do more troubleshooting on this zone. There are various possible reasons for the sprinklers to pop up slowly.

Conclusion

Sum up the report by

- Thanking the client
- Reiterating with the client who can do the repairs and/or upgrades and when
- Phone numbers and/or email addresses of people you would refer to the client to do the work
- Links to products you may have suggested
- Anything else you'd like to add...

Quick case study



The importance of pressure gauges



The importance of emitter placement



The importance of emitter placement



Take a flow reading for each zone



Image from rainbird.com

That's all folks!



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