

Water Well And/Or Pumping Plant Checklist  
FOR IRRIGATION PURPOSES

Version 1.0 March 2016

Producer/Client: \_\_\_\_\_ County: \_\_\_\_\_

Date: \_\_\_\_\_ Intended Well Purpose: \_\_\_\_\_

**Planning** Check (✓) as completed or (N/A) if not applicable.

- GIS Map showing location of Proposed Water Well/Pump and setbacks are met as applicable:
  - 500 feet for Sanitary Landfills
  - 100 feet- Animal Barns, Composters/Incinerators, Septic Systems (tanks/drain field), Chemical/Fuel Storage Tanks, Animal Burial Pits, Animal Feedlots, Waste Structures (lagoons, litter sheds, etc.)
  - 50 feet- Gravesites, LP tanks, "Other" Potential Groundwater Contamination
  - 25 feet- All Surface Waters, Other Buildings
  - Well is located outside of 100 yr. floodplain and any other hazard (see Water Well Job Sheet).
- Latitude and Longitude of proposed water well/pump location.
- Pumping Plant minimum flow rate and total head requirements are based on preliminary irrigation plan.
- State or Local Permit Number (if required) \_\_\_\_\_ (Note: State Permit Required if planned pump/well operation exceeds 100,000 gallons/day<sup>1</sup>)  State or Local Permit is NOT Required
- Completed applicable Job Sheets (642 - Water Well and/or 533 - Pumping Plant).
- O&M Plans are prepared, as applicable.
- Documented Planning/Site Approval from reviewer with adequate Job Approval Authority (JAA) is on-file.

**Construction Checkout**

- Field-verify that water well/pump installation has been installed at the planned location, properly tagged with ID plate(s) as required by NC Well Construction Standards (15 A NCAC 02C)<sup>2</sup>
- Field-verify the well casing does not exceed maximum depth by casing material, based on ID plate data<sup>3</sup>
- Field-verify that the Well-Head Protection has been properly constructed/installed:
  - Casing is a minimum of 1 foot above the ground surface.
  - A minimum of a 4" thick, 2 feet by 2 feet concrete slab around well casing.
  - Verify physical protection of the wellhead/pump with adequate enclosure to prevent freezing.
  - Verify electrical components (incl. lightning protection) meet the requirements of electrical codes.
- Field-verify well/pump yield meets or exceeds required flow rate and pump meets the minimum flow rate at planned operating pressure (meets total head requirements)<sup>4</sup> without cavitation (sucking air).
- Field-verify proper installation of back-flow prevention device(s). (One check valve is usually installed at or near the pump. Another check valve device will be needed for fertilizer/chemical injection.)
- Obtain copy of Contractor's Well Construction Record (GW-1, version August, 2013) and pump design curve.
- Obtain copy of state and any required county permit, if applicable.
- Verify the Operation and Maintenance Plan of pump/well has been delivered and discussed with operator
- Copy of Installation Approval letter or signatures on "As-Built" plans from individual with adequate JAA.

**\*Footnotes on Reverse Side\***

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<sup>1</sup>Compute daily planned pumping volume using irrigation design flow rate:

\_\_\_\_\_ GPM X 60 Min/hr. X \_\_\_\_\_ hours per day of expected operation = \_\_\_\_\_ gallons/day.

If the pump/well is to be used for pond re-charge or any other planned 24 hour operation, then the 100,000 gal/day threshold for a state permit being required is met with pump/well capacity exceeding 69 GPM.

<sup>2</sup>Well Plate Data Should Include (check as appropriate):

- |   |  |
|---|--|
| <input type="checkbox"/> Contractor Name & Certification Number | <input type="checkbox"/> Well Yield (GPM)                    |
| <input type="checkbox"/> Total Depth/Casing Depth               | <input type="checkbox"/> Static Water Level                  |
| <input type="checkbox"/> Casing Diameter                        | <input type="checkbox"/> Date Water Level Measured           |
| <input type="checkbox"/> Screened Intervals (depth levels)      | <input type="checkbox"/> Date of Well Completion             |
| <input type="checkbox"/> Gravel/Sand Packed?                    | <input type="checkbox"/> State Permit Number (if applicable) |

Pump Plate Data Should Include (check as appropriate):

- |   |   |
|---|---|
| <input type="checkbox"/> Contractor Name & Certification Number | <input type="checkbox"/> Pump Horsepower Rating |
| <input type="checkbox"/> Depth of Pump Intake                   | <input type="checkbox"/> Date Pump Installed    |

<sup>3</sup>PVC Plastic Well Casing Maximum Depth Not Exceeded? (Verify as appropriate)

**Schedule 40**

- 2 inch depth < 485 feet
- 3 inch depth < 415 feet
- 4 inch depth < 253 feet
- 6 inch depth < 130 feet
- 8 inch depth < 85 feet

**Schedule 80**

- 2 inch depth < 1460 feet
- 3 inch depth < 1170 feet
- 4 inch depth < 755 feet
- 6 inch depth < 495 feet
- 8 inch depth < 340 feet

<sup>4</sup>Measure flow rate near pump using same size discharge as mainline plumbing. DO NOT measure using spigot outlet! Open discharge and allow adequate time for pump tank (if installed) to empty and maintain output pressure steady at 50%, then 75%, then 100% of planned design operating pressure. Time filling a five gallon bucket in seconds, with an average value from at least 3 repetitions.

60 sec per min./\_?\_ (Bucket filled in seconds) X 5 gal. = \_\_\_\_\_ GPM

Example: Design calls for pump to deliver 50 GPM at 50 PSI (92 feet of total head - TDH). Measure flow at 25 PSI, 38 PSI, and 50 PSI. Flow volume will **increase** as pressure head **decreases**.

At 25 PSI, average bucket fill time is 60/4.5 sec. X 5 = 66 GPM

At 38 PSI, average bucket fill time is 60/5.1 sec. X 5 = 59 GPM

At 50 PSI, average bucket fill time is 60/5.8 sec. X 5 = 52 GPM

***Pump/Well is OK!***

Note that this example pump should NOT be used at less than 25 PSI pressure for any 24 hour period because it likely exceeds the 100,000 gal/day state permit threshold and may also reduce pump life due to higher than designed discharge GPM rate (see manufacturer's pump curve for acceptable range).