The following items should be done on Monday since no analysis is performed. Not all items are performed every week. Analyst should use their judgement on whether maintenance needs to be done sooner based on how analytical runs looked the previous week.

Every week:

1. Empty, rinse, and refill any container of DI water that will be used that day
2. Prepare weekly reagents and make new labels
3. Empty and clean standards rack
    a. Empty and rinse tubes with DI water 3 times
    b. Fill with 50% HCl then rinse 10 times with DI water
    c. Leave upside down to dry on new paper towel
4. Check if any standards will expire or run out during week – if so, prepare them
    a. Best practice- calibrate pipettes before making standards
    b. Old standards should be kept until new ones are verified against them
5. Check if pipettes are due for calibration during week– if so, calibrate pipettes
6. Check enough supplies to run for week – if not, order supplies
7. Perform maintenance if due or **as needed** from run performance
8. Tidy PO4 area – change bench paper, wipe down dust, etc as needed
9. Make 4 copies of reagent/standard sheet for the week after placing new labels
10. Discard old labels for expired reagents/standards in LIMs

Performed at least every 2 weeks:

1. Clean and lube pump
2. Change all pump tubing
3. Change airbar tubing
4. Check tubing joints – replace if needed
5. Check waste lines – replace if needed
6. Write all maintenance performed in maintenance book, initial, and date

Performed at least once a month:

1. Calibrate pipettes
2. Prepare new standards and make new labels –
    - Replace labels on standard rack tubes once new standards are used
3. Thorough cleaning of the instrument (write in maintenance book):
    - Turn on instrument
    - Clean sample probe wash receptacle:
        - While sample probe is lifted, pour 10% bleach (prepared FRESH, do NOT use Clorox) into wash receptacle
        - Use a Q-tip or cleaning swab to scrub along sides/bottom
        - Rinse with DI water using entire DI water squirt bottle x2
    - Clean sample probe:
        - Start pump with lines in DI water

- Fill tube with 0.1 HCl (acid) and another with 1 N NaOH (base) and place in standard rack
- Open software and start charting
- Double click XY3 Sampler icon in System window
- Send probe to acid tube (10 mins) → Wash/DI water (10 mins) → Base (10 mins) → Wash/DI water (10 mins) – **May need to refill tubes**
- **Do NOT** bleach sample probe- will strip lining inside probe and cause bubble breakage/carryover

- Pump in the reagent lines on Normal speed:
  - DI water (10 mins)
  - Acid (10 mins)
  - Water (10 mins)
  - Base (10 mins)
  - Water (10 mins)
  - 10% bleach (prepared FRESH, do NOT use Clorox – 10 mins)
  - Water (at least 15 mins)
- Clean and lube pump
- Change all pump tubing (**MUST** BE DONE AFTER 10% BLEACH)
- Change tubing from heater to detector
- Change waste lines
- Run DI water and SDS through new pump tubing/clean system until bubble pattern is smooth/good and there is a stable baseline (can take more than an hour)
  - **Note**:
    - 10% bleaching of the system aggressively strips the glassware and tubing. Glass tubing can be re-lubed with SDS, but pump tubing will be killed and thus must be replaced.
    - The transmission tubing and tubing joints may survive with plenty of SDS but needs to be looked at closely to make sure bubbles aren't dragging (back end will be flat), breaking, or getting stuck. Replace if needed.

Performed as needed:

1. Prepare CuSO4 reagent and make new labels
2. Replace all bottles holding reagents and standards with new ones

The following cleaning procedure is done at least every other day (typically Wednesday and Friday). Cleaning should also be done after any analytical run containing many samples with high level orthophosphate or with difficult matrix (i.e. effluent matrix). Analyst should use their judgement on whether cleaning needs to be done sooner based on how analytical runs look daily.

Set the pump to Normal speed: Place lines in water (5 mins) → acid (minimum 5 mins) → water (minimum 5 mins) → base (minimum 5 mins) → water (minimum 15 mins). Write in maintenance book