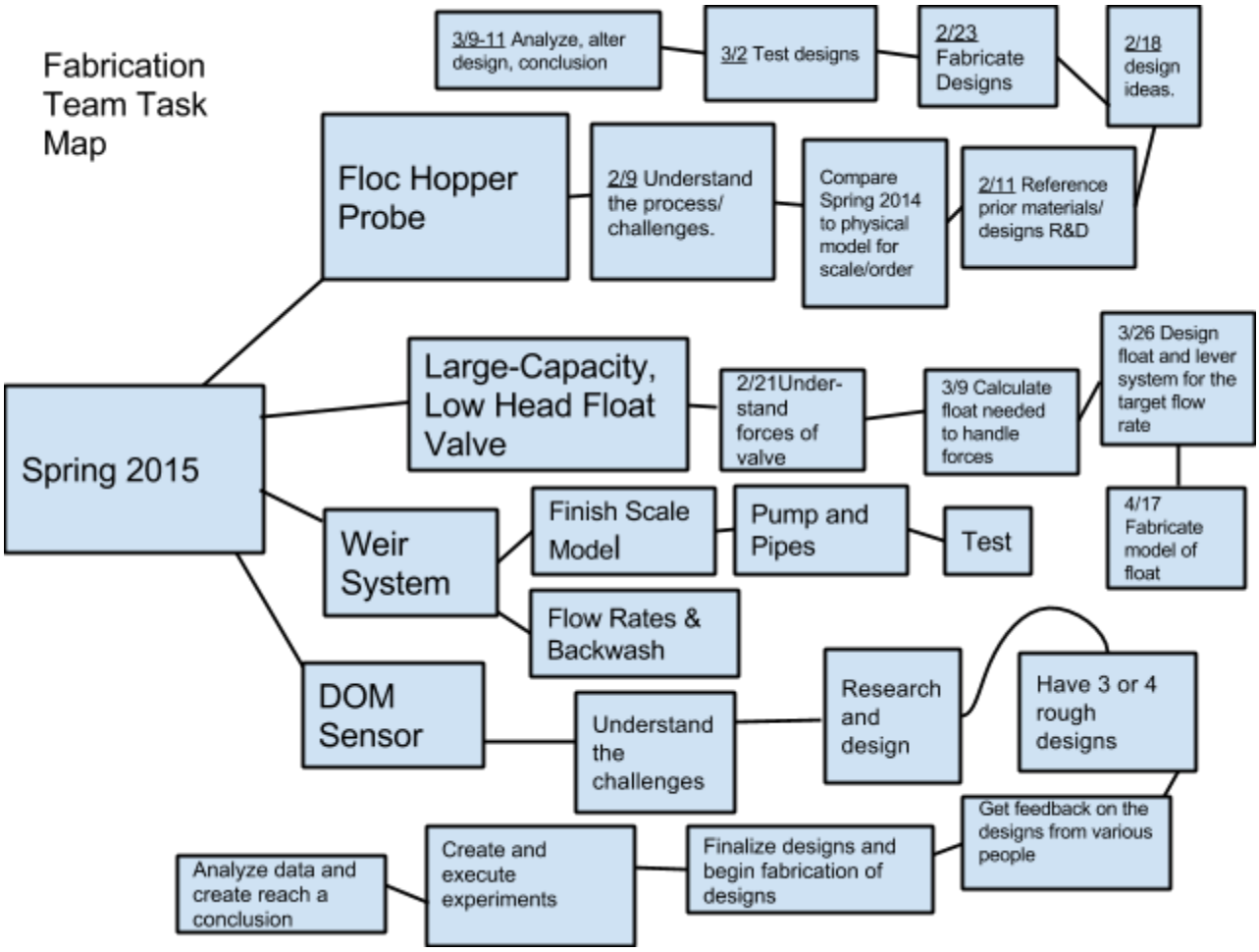

Task List

Floc Hopper Probe

Team: Stephen Love, Garret Jancich

Challenges:

1. Understand the challenges and the status of the previous model and report.
    - Review challenges faced by Fall 2014 team and propose solutions.
    - Do R&D based on the strides made and limitations met in Spring 2014.
2. Work on designing a probe with a removable cap. (Garret)
    - Attack the issues on ease of visibility and work with how the LED light can effectively interact with the tube and the user. (Steve and Garret)
    - Work on the extendable length/special features of the design. (Steve)
    - Decide on materials needed. Order any special materials/supplies. (Steve and Garret)
    - Have research and basic designs done by February 20th.

- Have 2-3 possible designs settled on by February 27
- Focus on removable cap and extendable length per 2014's suggestion

3. Fabricate the possible designs. 2/23-27
    - Once we have solid design possibilities, fabricate them one at a time, testing them after each fabrication to see how we should adjust our future possible designs. (Garret, Steve)
    - Determine optimal materials for performance standards (Steve)
4. Testing the possible designs. 3/2
    - After each design is fabricated, we will test them intermittently to see which alterations should be made. (Garret, Steve)
    - Spring 2014 had issues with meaningful and effective testing.
    - They suggested replicating a floc weir/floc hopper so that tests could be made in the lab.
    - We should consider this for effective testing. (Garret)
    - Remember to correctly transfer scale to recreate actual events in full-scale model. This will be accomplished by reducing the entire model to a 1/8th scale.
5. Evaluate designs and Conclude. 3/9-11
    - After testing the various designs, perfect the most effective one. (Garret, Steve)
    - Document process and findings in one final report. (Garret, Steve)
    - Depending on how quickly we can effectively finish this task, we will assist in other fabrication projects later in the semester.

DOM Sensor

Team: Andres Larraza

Challenges:

1. Understand the challenges with the current DOM sensor.
    - Given the information in the "Challenges Spring 2015" Google Doc, determine whether we want to develop our own sensor that senses DOM in water or not
    - Do research based on the findings for the above decisions and create designs and experiments based on these findings.
    - Set the specific requirements of the sensor, as in cost, portability, accuracy
    - Have research and info done by March 7th
2. Once the information is known, create designs
    - Have at least 3 or 4 possible designs, each with some variation and distinct from each other.
    - Have the rough sketches by March 22nd
3. Review designs with peers, Ethan, and possibly Monroe
    - Review the pros and cons of each design
    - Fine tune the designed according to critiques by March 31st
4. Finalize designs and begin fabrication of the models
    - Have done by April 20th
5. Given that the designs work and are fabricated, the next step would be to test the sensors

- Set up experiments and run the tests at different turbidities as well as concentrations of DOM and other particles present in the water plants
- Design experiments by April 25th
- Have all data and data analysis by May 6th with final decision on May 9th

LARGE FLOAT VALVE

Team: Kwabena Nimo

Challenges:

1. Understand the forces at work in a float valve
    - Determine the main forces at work and which dimensionless constant we are changing.
    - Determine what variables need to be controlled
    - Complete February 21st
2. Calculate float size necessary to overcome forces on the valve
    - Float valve must be able to throttle 12 L/s of flow
    - Float valve must be able to operate with up to 1.5 m of head
    - If the design float valve is impractically sized, explore what other options are available.
    - Complete by March 9th
3. Design a lever system and float system as needed to achieve the required force and design a simple valve closure system
    - Complete by March 26th
4. Fabricate a test model of the valve that can effectively handle the target 12 L/s of flow
    - Construct a way to easily test the float valve model
    - Complete by April 17th

Weir System

Team: Stephen Galdi, Natalie Mottl

Challenges:

1. Understand the scaling of the weir model fabricated by last semester's Fabrication Team
    - Determine what range of flow rates will keep the relevant non-dimensional parameters the same as in the plant
    - Complete by February 11th
2. Plan and construct a system of pipes and a pump to supply the designed flow rate
    - Complete setting up the model using the PVC pipe available in the lab (Stephen)
    - Acquire an available pump in the lab that will meet the design parameters (Natalie)
    - Ensure that there are no leaks, flow problems, or other issues running the model
    - Complete by February 23th

3. Measure the resulting flow rate and verify that the weir system works as intended
    - Use simple system of measuring change in volume in a certain time period to measure flow rate.
    - Run repeated trials of the weir system over the range of similar flow rates.
    - Process the results and prepare preliminary conclusions
    - Complete by March 9th
4. Document results of the trials and generate the final report on the weir system
    - Complete by March 16th
5. Assist with the DOM Sensor and Large Float Valve after completion of the weir system
    - Stephen: assist Andres with the DOM Sensor
    - Natalie: assist Kwabena with the Large-Float Valve