- **Personal information**

Name: Bryce Figdore
Email: figdoreb@uw.edu

- **Education**

University of Washington
PhD candidate in Civil and Environmental Engineering (2012-present)

Villanova University
M.S. in Water Resources and Environmental Engineering (2011)

Pennsylvania State University
B.S. in Agricultural Engineering, with distinction; Environmental Engineering minor (2004)

- **Research interests**

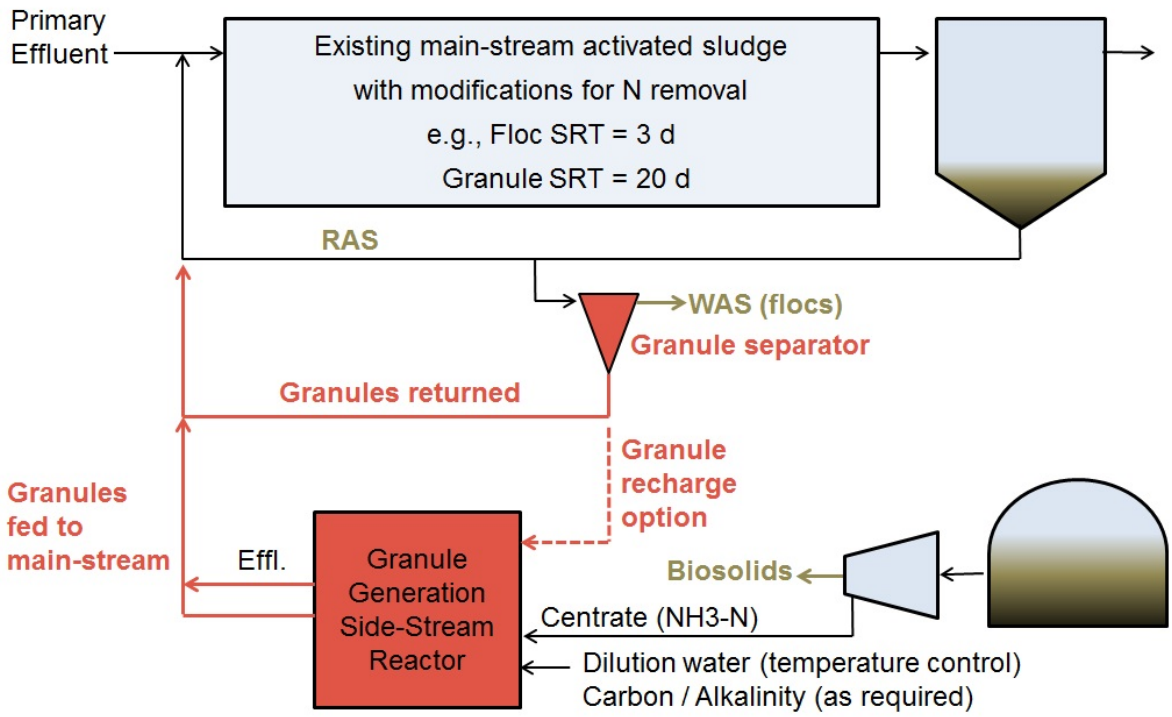
Flocculent nitrifying sludge grown on ammonia-rich anaerobic digestion dewatering sidestreams (i.e, centrate or filtrate) has been successfully used for bioaugmentation of the mainstream treatment nitrification capacity at various scales from laboratory to plant scale in configurations such as InNitri®, BABE, BAR, RDN, and CaRRB. The common objective of these processes is to achieve nitrification in smaller reactor volumes and at shorter SRT values than otherwise required for conventional nitrification design, even at low winter temperatures. A disadvantage of these systems is that the SRT of the bioaugmented flocculent nitrifying sludge is the same as the bulk activated sludge; as such, the critical nitrifying organisms are routinely wasted, thereby limiting potential bioaugmentation benefit and mainstream nitrification capacity increase.

Aerobic granules function as a biofilm with both nitrification and denitrification under certain conditions. Important features of AGS are its large size (typically 0.5-2 mm) and rapid settling velocity. Due to these unique physical characteristics that allow granules to be separated from the waste activated sludge and returned to the mainstream, the granular sludge SRT can be decoupled from the limited SRT of the flocculent activated sludge. Therefore, if nitrifying granules are bioaugmented to the mainstream, the critical nitrifying biomass concentration in mainstream treatment can be greatly increased. A key advantage for the use of AGS in this fashion is the potential ability to increase an existing plant nitrification capacity and performance without construction of additional mainstream tanks and increased footprint.

Therefore, the overall goal of my research is to demonstrate the feasibility of mainstream nitrification bioaugmentation using aerobic granular sludge grown in a sidestream treatment process (figure below). Specific objectives include:

(1) Evaluating the impact of growth conditions (nitrification versus nitrification-denitrification) on granule characteristics.
(2) Assessing the impact of real wastewater (i.e. centrate) versus synthetic wastewater on granulation and process performance.

(3) Estimating the useful life of bioaugmented granular sludge with respect to maintenance of granule integrity and nitrification capacity when subjected to mainstream conditions.



- **Scientific output**

Presentations:

"Aerobic Granular Sludge for Wastewater Treatment". Water and Environment Student Talks 2014. University of British Columbia, Vancouver, BC.

"Sidestream Growth of Nitrifying and Nitrifying-Denitrifying Granular Sludge for Use in Mainstream Nitrification Bioaugmentation". WEFTEC 2015, Chicago, IL.

"Aerobic Granular Sludge Review and Nitrification Bioaugmentation Using Aerobic Granular Sludge"; Pacific Northwest Clean Water Association Annual Conference and Exhibition 2015, Boise, ID.

- **Awards & Scholarships**

1. 2012-2015 King County Graduate Student Research Fellowship

- **Professional experience**

Prior to pursuing research at the University of Washington, Mr. Figdore was previously employed for eight years in engineering consultancy, where he acquired professional licensure and expertise in the evaluation, modeling, design, and construction of upgrades to wastewater treatment facilities, primarily focused on nutrient removal processes and the treatment of high-strength ammonia-laden waste streams.