Road Salt Runoff (Nov 21)

Reducing Road Salt Use

This memo considers two grant-based pilot programs for reducing salt use: anti-icing and application training. The options are weighed according to feasibility and effectiveness. I recommend establishing a grant-based application training initiative administered jointly by EGLE and MDOT. The application training approach is sustainable long-term, can be scaled up, and has the potential for mandatory implementation.

Runoff from road salt into MI waterways

Runoff from ice-clearing salt pollutes MI waterways. The Huron River Watershed Council found particularly high levels of chloride in populated areas. As salt prices rise and new research shows that salt is ineffective below 20 degrees, MI should transition to beet juice as its deicing agent. This memo compares road salt reduction strategies with two agricultural substitutes based on environmental effects and cost. It recommends legislation authorizing MDOT to mandate beet juice as the state's deicing agent.

Cost-sharing to Repair County Salt Storage Facilities

In the last five years, the legislature has not appropriated sufficient funds to repair salt storage facilities that are leaking salt into Michigan's waterways. Stopping salt storage facilities from leaking saves counties money in annual salt purchases. This memo proposes a cost-sharing program based on county median income. In contrast to funding the full amount, cost-sharing by median income could be much less expensive for the state since higher-resource counties would be contributing more. It also directs funds to where they are most needed: facilities that are least likely to be replaced without state aid.

Exploring Street Sweeping Practices to Address Road Salt Pollution

This memo proposes a pilot program to study the ability of street sweeping to reduce road salt runoff. Three locations are assessed: Ann Arbor, Detroit, and Lansing. These locations have road-sweeping and are near waters that connect to the Great Lakes. I recommend legislation for a street-sweeping pilot in Ann Arbor because it has swift-sweeping practices and a politically feasible environment. Program funding and staffing may present challenges, which I discuss.

Road Salt Reduction

Road salt is a major source of pollution for Michigan's waters the legislature has ignored. This memo compares the pros and cons of proposing legislation that would require the implementation of road salt reduction practices vs. maintaining the status quo. The former offers the best balance between effectiveness and stakeholder interests.

Microplastic Pollution (Nov 21)

Modifying the Industrial Storm Water Operator Certification Process

Microplastics have accumulated in Michigan waters. Without action, they will continue to do so, in part because of contaminated industrial stormwater (ISW) discharges. This memo discusses

the causes of the problem, namely the difficulties manufacturers face in managing microplastics along their supply chains and the lack of incentive they have to improve ineffective measures. It then proposes three policy options related to EGLE's ISW discharge permit program and ultimately recommends modifying the ISW operator certification process.

Legislation to Advance Tire Particle Research
Municipal stormwater sends microplastics into the Great Lakes water supply, having detrimental effects that scientists are only starting to uncover. When driven, cars shed tire particles, a predominant and dangerous source of microplastics. This memo recommends that you create a bill to incorporate funding in the 2025 fiscal year budget for a microplastic research grant that would support standardized microplastics and tire particle monitoring in Michigan.

Legislation to Prevent Residential Microplastic Pollution in Michigan
Microplastic pollution (MP) is an immediate public health threat in Michigan. This memo introduces legislative avenues that you can pursue to address MP in municipal waterways: 1) propose tax credits for purchasing microplastic filters, 2) introduce a microplastic "consumer education bill," and 3) mandate regular water quality testing service through EGLE. I recommend that you propose a filter tax credit that moderately appeals to stakeholders, is cost-effective for consumers, and can secure legislative support.

Strategies to Address Microplastic Pollution in Michigan's Industrial Wastewater
This memo focuses on industrial wastewater as a primary point source of microplastic pollution in Michigan, which poses severe health risks for the state's 10 million residents. Following a background summary and issue analysis, I propose and evaluate three legislative options to mitigate this issue: 1) Mandate regular monitoring and reporting of microplastic discharges in industrial wastewater, 2) develop and enforce comprehensive discharge regulations, and 3) incentivize industrial microplastic reduction through a supply-side tax credit. Evaluated on political feasibility, sustainability, equity, and financial costs, I ultimately recommend legislation that proposes mandated monitoring and reporting.

Industrial PFAS (Nov 28)

Enforcing PFAS Limit Compliance Through Industrial PFAS Discharge Transparency
Nearly 40% of industrial wastewater dischargers in Michigan are found to exceed acceptable levels of per- and polyfluoroalkyl substances (PFAS), posing significant health risks to the communities around the Grand and Huron Rivers. Among these risks are those related to cancer and reproductive health. This situation has led to public demands for more transparent enforcement of PFAS limit regulations. After evaluating two legislative options—increasing penalties for polluters and mandating the disclosure of industrial PFAS discharge

data—considering political feasibility, public perception, and effectiveness, I recommend the latter. Mandating the publication of PFAS discharge data is not only more politically viable but also fosters collective responsibility and drives long-term behavioral change within industries.

A Targeted Ban for Combatting PFAS in Industrial Wastewater

PFAS exposure is linked to several illnesses, such as “thyroid disorders, pregnancy-induced hypertension, and cancer.” Many Michigan industries use PFAS in consumer goods production. To address the problem, this memo examines two types of PFAS bans: one that bans PFAS in certain consumer goods and one that bans PFAS in all goods by a certain date with the inclusion of conditional exemptions. Both options are assessed on effectiveness, political feasibility, and equity. Based on these criteria, a targeted ban is the best option.

Long-term Preventative Measures to Address PFAS Contamination

This memo analyzes ways to help Michigan better address the issue of industrial wastewater contaminating Michigan waterways with PFAS. It will provide an explanation for why Michigan needs to focus resources specifically on preventing PFAS from entering Michigan’s waters via industrial discharge. This memo will then evaluate potential solutions based on their political feasibility, economic feasibility, and effectiveness. I recommend a PFAS Pollution Prevention Project that would establish collaborative efforts between businesses and the state to address PFAS contamination.

Addition to Polluter Pay Legislation

Understanding the recent uptick in social support and feasibility surrounding state legislation addressing PFAS contamination and industrial responsibility, it is imperative that the Michigan legislature acts quickly to capitalize on the opportunity. This memo discusses options for additions to the Polluter Pay Legislation recently introduced and implementing punitive action for those found guilty of PFAS pollution. Ultimately, upon consideration of political and economic feasibility and equity concerns, I recommend adjusting timelines for citizen pursuit of legal action after environmental violations from three to six years.

PFAS in Municipal Drinking Water (Nov 28)

PFAS Reporting

EGLE's PFAS testing requirements and reporting mechanisms are too relaxed to mitigate the health risks caused by PFAS due to the (1) lenient MCLs and (2) annual PFAS reporting that effectively circumvent single and seasonal MCL violations. While polluting sites may violate MCLs due to a single point or seasonally-based contamination, their annual average can still be reported below the MCL, putting municipal drinking water systems at risk that the state may not be aware of. As part of the legislative efforts surrounding PFAS, I recommended more stringent testing and reporting requirements for single and cumulative PFAS contamination by (1) requiring reporting on a quarterly basis and (2) placing sites under ACO after one-quarter of reporting that exceeds MCLs.

Cumulative Limits on PFAS in Michigan's Drinking Water

PFAS are harmful to people's health on their own, but PFAS bioaccumulation compounds the harms and makes them worse. This memo analyzes the effect of PFAS bioaccumulation in humans and drinking water, evaluates the policy option that would best mitigate its effects, and recommends updating Michigan's drinking water regulations to include PFAS cumulative limits.

Disparities of PFAS Pollution on Low-Income & Minority Communities

This memo examines inequities of PFAS contamination in Michigan's municipal drinking water. I compare indicator variables that U.S. states use to define "disadvantaged communities" to determine which captures the greatest number of people in need of grant funding from the EPA. I recommend amending the Natural Resources and Environmental Protection Act to include Environmental Justice indicators. While they require additional implementation costs, they capture communities in need better than current methods.

Treating and Preventing PFAS in Michigan's Municipal Drinking Water via Destruction

This memo identifies and critiques prevailing strategies for treating PFAS in Michigan's drinking water. Alternative treatment options that aim to "destroy" PFAS are presented and weighed against goals of effectiveness, efficiency, and sustainability. The memo concludes by recommending the amendment of a bill to fund the creation of a pilot program that introduces the use of supercritical water oxidation technology to municipalities.

Agricultural Runoff (Nov 30)

Agricultural Runoff in Southeast Michigan

While appearing benign, agricultural runoff is a significant source of pollution in Michigan, and the state has fallen short of its promises to reduce it. Following a brief review and analysis of agricultural runoff in Michigan, this memo will (1) explore the feasibility of changing the rules for agricultural runoff measurements and (2) examine the possibility of proposing a bill to create an inter-agency office between EGLE and MDARD, focusing on agricultural runoff in southeast Michigan. After evaluating options on their efficiency, political costs, and potential for success, I recommend drafting a bill that creates the inter-agency office.

Reducing Phosphate Fertilizer Use on Highly Saturated Soil

Agricultural run-off from phosphorus fertilizers contributes to harmful algal blooms, destroys ecosystems, imperils drinking water, and causes tens of millions of dollars in damage. Keeping in mind efficacy in reducing soluble reactive phosphorus and the state's limited regulatory authority for nonpoint source pollution, I recommend that Michigan 1) ban the application of phosphate fertilizer where plant-available soil phosphate levels are above 100 parts per million, and 2). scale up a Lenawee County pilot that incentivizes voluntary fertilizer reduction and provides insurance against crop yield reductions.

A Regulatory Regime for Phosphorus Runoff

Legislation directing MDARD to issue regulations requiring farms to develop Nutrient Management Plans (NMPs) will help farmers implement conservation practices that reduce phosphorus runoff.

Legislation to Require CAFOs to Disclose Phosphorus Pollution Data

This memo addresses the rising problems caused by agriculture pollution from CAFOs. I summarize Michigan's current problems with CAFO phosphorus output, compare two policy options to reduce phosphorus pollution, and recommend legislation to require CAFOs to publish more phosphorus-focused data.

Improving Education of Michigan Farmers about Agricultural Runoff

Educational outreach to farmers has failed to persuade them to adopt conservation practices to minimize the toxic farm runoff that creates harmful algal blooms in the Great Lakes. To improve their education, I consider three options—funding reallocation within either MSU Extension (MSUE) or MDARD, or the creation of a cross-agency initiative—and recommend the MSUE option for its cost-effectiveness, political viability, and ability to maximize CP adoption among Michigan farmers.

Leaking Septics (Nov 30)

Reducing Pharmaceutical Contaminants in Septic Systems
Pharmaceutical contaminants from septic systems threaten human and ecological health. The most effective method of decreasing contamination is public education and accessible options for pharmaceutical disposal. I conclude that a mandate for pharmacies to provide pharmaceutical educational materials and disposal drop-off is the most efficient, accessible, and politically feasible.

A Three-year Targeted Investment in Backlog Septic System Inspections
The lack of statewide regulations has resulted in a backlog of faulty and failing septic systems that allow the flow of contaminated wastewater into our water sources. Government-mandated inspections can catch faulty systems and improve the quality of local waters. I review two approaches to manage the backlog of faulty and failing septics, specifically reviewing the political feasibility, effectiveness, and financial cost of five-year rolling inspections and five-year rolling inspections following a three-year targeted investment in backlog inspections.

Equitable Funding for Michigan Septic Regulations
One major hurdle Michigan has faced in implementing septic regulation is the cost these would impose on low-income homeowners to repair their septic tanks. As you work to pass a septic code, you should include explicit measures describing support for low-income homeowners. Options include a revolving loan fund, a grant program, and property tax credits. Using the criteria of equity, political feasibility, and financial efficiency, I recommend adding details of a revolving loan fund and targeted grants to recently proposed septic legislation.

Septic Tank Regulation and Water Well Inspections
A new water well inspection regime would be a valuable addition to recently proposed Septic Codes. Leaking or failed septic systems often transmit sewage into adjacent wells. I propose a county-run program modeled on other states with well-inspection policies.

Additional Inspections for Water-Adjacent Septic Systems
Septic systems on water-adjacent properties that fail can leak sewage faster than septic systems that are land-locked, posing a greater risk to surface water. New Hampshire, North Carolina, and Wisconsin have more rigorous inspections for septic systems on water-adjacent properties. This memo concludes that increased regulations for septic systems on water-adjacent properties will enhance the proposed legislation in Michigan.