

Using the R³ Paradigm to Understand Decision Making in the Beneficial Use of Dredged Material Projects

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Project Framework & Context

Purpose: Contribute to understanding the complexities of beneficially reusing dredged materials by applying an ideal management framework to completed projects; focusing on each part of the interconnected systems to better understand the ways that the projects are interrelated.

Methods: Utilize a comparative case study approach to identify project processes for three sites where dredged materials were beneficially reused. Input each project into the R2R2R framework to identify divergences and assess each process.

Case Sites:

Atlas



- Size: 62 acres
- Owner: Duluth Economic Development Authority (DEDA)
- Project type: Brownfield restoration
- Dredge use: Stormwater buffer ponds, site re-grading
- Contaminants: Asbestos, Arsenic, Lead, PAHs, high pH
- Project partners: City of Duluth, DEDA, MPCA

40th Avenue W.



- Size: 317 acres (aquatic)
- Owner: MNDOT
- Project type: Aquatic habitat improvement
- Dredge use: Underwater shoal and berm construction
- Contaminants: Mercury, Nickel, PAHs, PCBs, wood waste
- Project partners: USACE, MPCA, MNDNR, WIDNR, USFWS, Fond Du Lac Resource Management

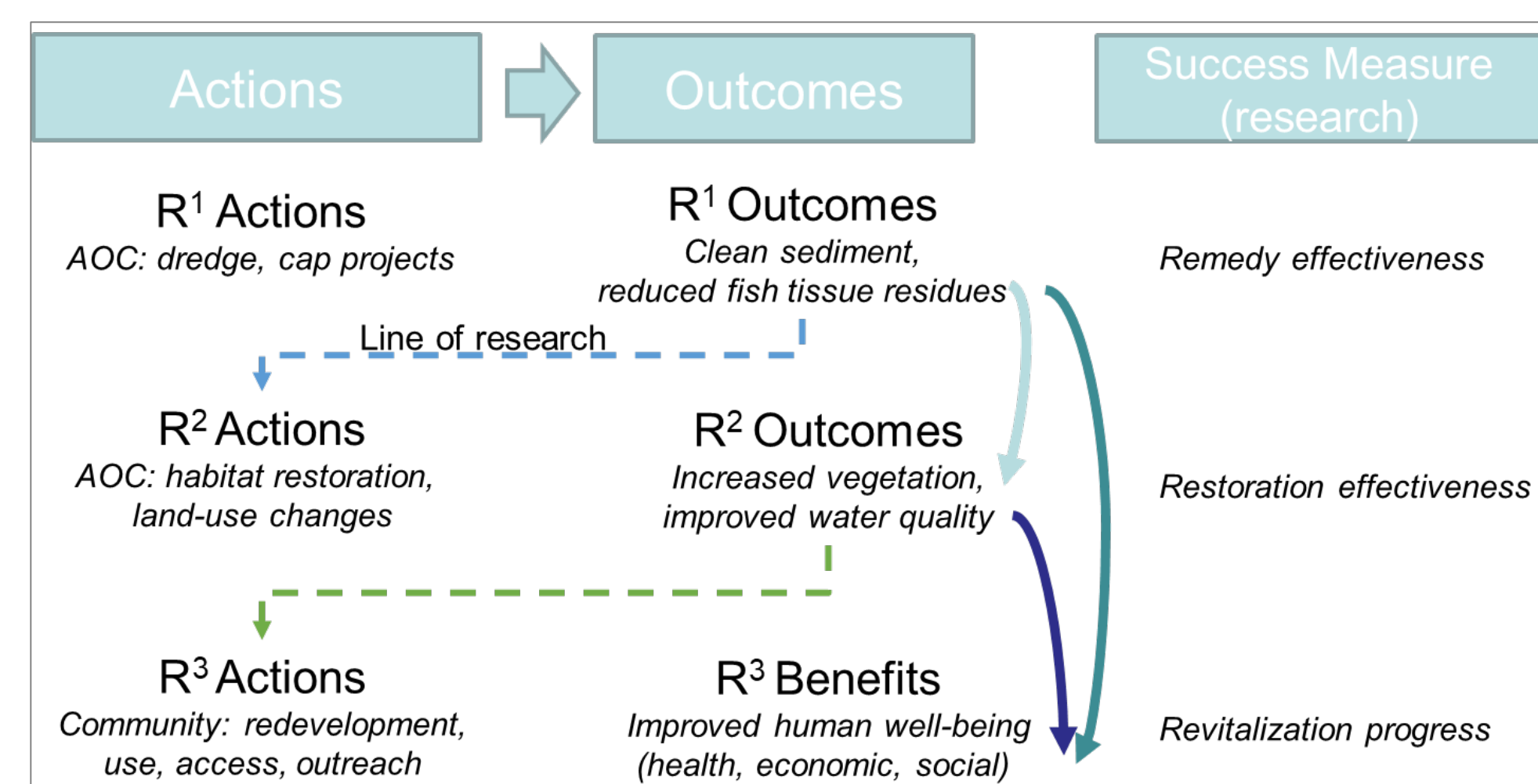
DWP



- Size: 55 acres
- Owner: MNDOT
- Project type: Habitat and trail improvement
- Dredge use: Topsoil capping
- Contaminants: Asbestos, Copper, Lead, fuel byproducts
- Project partners: City of Duluth, MNDOT, MNDNR, Duluth Seaway Port Authority, Community Action Duluth, USFS

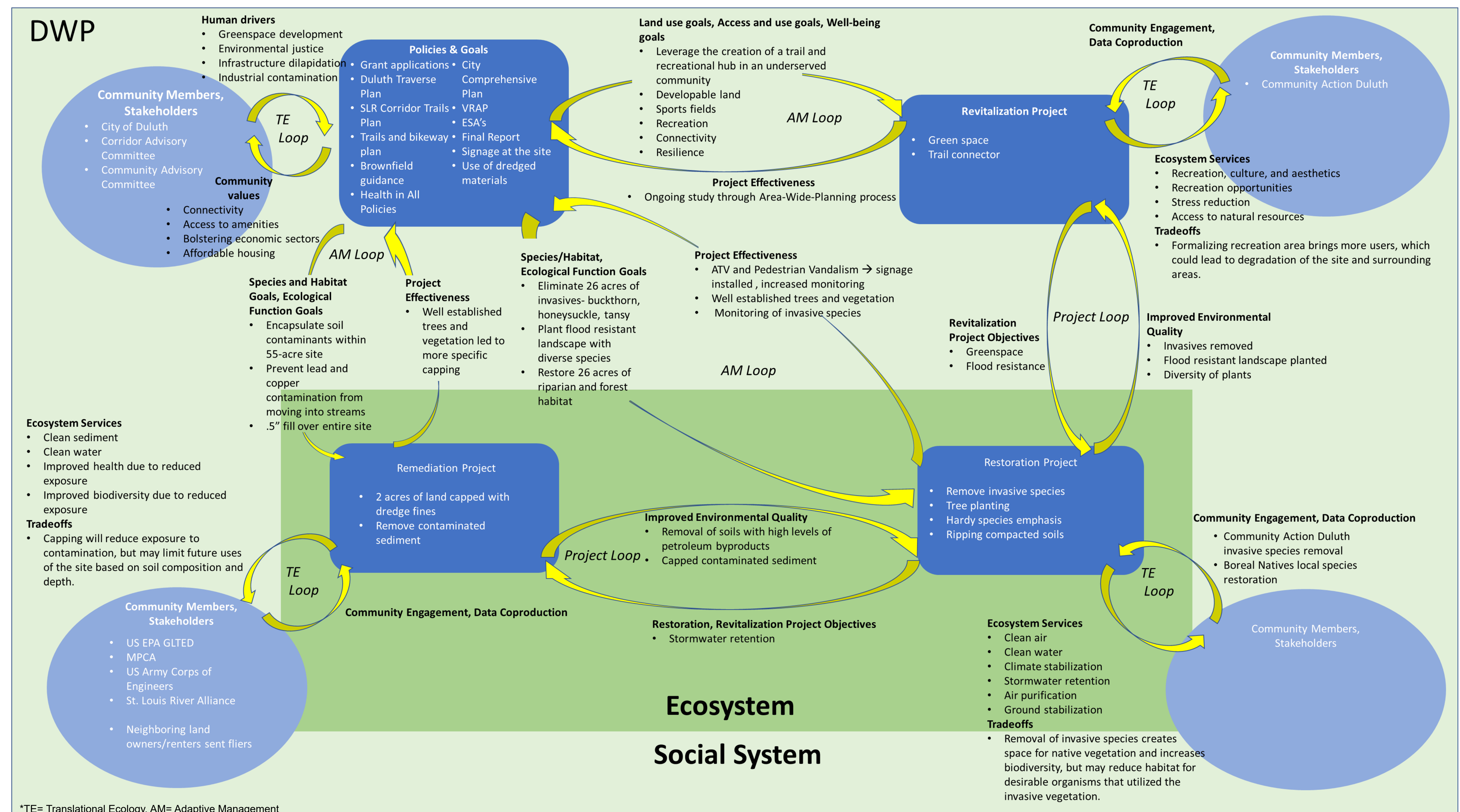
R2R2R Framework Context

Goal of R2R2R: “To help transform remediation projects into sustainable revitalization of the surrounding community by maximizing the positive societal and environmental outcomes,” (Hoffman, 2018).



- **Remediation** = Addressing and removing contamination using physical, biological, and chemical measures
- **Restoration** = Returning a natural space to its original, uncontaminated condition or an equivalent state
- **Revitalization** = Economic and social benefits resulting from remediation and restoration activities

Application of Framework



Findings & Implications

- Connects remediation, restoration and revitalization regardless of whether the processes are directly related or occurring concurrently.
- Identifies overlapping policies/goals for each of the projects and the ways they may influence other aspects of the projects.
- Increases transparency and connects decisions.
- Identifies dredged material significance in all aspects of decision making:
 - Written into the policy/guidelines
 - Used during remediation and restoration
 - Must meet guidelines and be suitable for end-use (revitalization)
- Provides opportunity for proactive material placement based on opportunities, rather than accepting materials only when/if they become available.
- Helps identify gaps in the process.

References

Hoffman, Joel. Remediation to Restoration to Revitalization (R2R2R): Tools to Support Remedy Decisions. November 2018. https://www.epa.gov/sites/production/files/2018-11/documents/r2r2r_november_14_webinar_slides_upload.pd. Power Point.

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