

# Pilot\_MAR\_External

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Start of Block: Context

Q1 Dear Potential Participant:

You are being asked to participate in a study to help us understand people's knowledge and opinions of managed aquifer recharge (MAR) projects. We will use this information to develop a screening tool to help water managers locate the most suitable sites for implementing MAR. Your participation would involve answering questions about your knowledge and expectations of MAR. We will not ask for your name, address, or any other personal information. No one will be able to identify you based on your responses.

Your involvement should take about 15 minutes. Your participation in this study is voluntary. If you choose not to participate or to withdraw from the study at any time, there is no penalty.

The research study's results may be published, but your name and other uniquely identifying information will never be published or associated with your answers in any way.

Although there may be no direct benefit to you, your participation may lead to an improved understanding of how MAR may benefit communities and where MAR sites should be located.

If you have any questions concerning the research study, please call us at (480) 965-0499 or email me at [amber.wutich@asu.edu](mailto:amber.wutich@asu.edu)

Sincerely,

Amber Wutich, Ph.D.  
Professor  
School of Human Evolution and Social Change  
Arizona State University

If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact the Chair of the Human Subjects Institutional Review Board, through the ASU Research Compliance Office, at (480) 965-6788 or the ERDC Human Research Protections Director, Robert P. Jones, PhD at 601-831-7420 or [robert.p.jones@usace.army.mil](mailto:robert.p.jones@usace.army.mil).

OMB CONTROL NUMBER: 0710-####  
OMB EXPIRATION DATE: XX/XX/XXXX

AGENCY DISCLOSURE NOTICE The public reporting burden for this collection of information, 0710-MARP, is estimated to average 15 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden

estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

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Q2 By clicking "yes," you consent to taking this survey.

Yes (1)

No (2)

*Skip To: End of Survey If By clicking "yes," you consent to taking this survey. = No*

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Q3 Looking at the following map, which watershed do you work in?

▼ 01 New England (1) ... 21 Caribbean (21)

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Q4 Watershed Map

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Q5 Have you heard about managed aquifer recharge (MAR)?

Yes (1)

No (2)

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*Display This Question:*

*If Have you heard about managed aquifer recharge (MAR)? = Yes*

Q6 Please tell us briefly what you know about MAR (please use full sentences and do not include identifying information).

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Display This Question:

If Have you heard about managed aquifer recharge (MAR)? = No

Or Have you heard about managed aquifer recharge (MAR)? = Yes

Q7 Managed Aquifer Recharge (MAR) is the practice of capturing surface water and redirecting it to recharge aquifers. This can be accomplished by flooding open and agricultural lands, or through the use of injection wells and recharge basins.

End of Block: Context

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Start of Block: Interest in MAR

Q8 How interested would you be in carrying out MAR where you work?

	Not interested at all (1)	Slightly interested (2)	Neutral (3)	Very interested (4)	Extremely interested (5)
Level of interest (1)	0	0	0	0	0

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Q9 Below is a list of MAR methods. Which do you think are a good fit for where you work?  
Select all that apply.

- Controlled flooding (1)
- Floodplain restoration (2)
- Dedicated recharge basins (3)
- Injection wells (4)
- On farm recharge (5)
- Taking agricultural land out of production for recharge purposes (6)
- Other (7) \_\_\_\_\_
- Don't know (8)
- Prefer not to answer (9)

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Q10 Why did you make these selections? (Please use full sentences and do not include identifying information)

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Q11 What benefits do you think MAR could present where you work? (Please use full sentences and do not include identifying information)

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Q12 What concerns do you have about carrying out MAR where you work? (Please use full sentences and do not include identifying information)

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Q13 Below is a list of possible benefits of MAR. Which are relevant where you work? Please select all that apply.

- Water for agriculture (1)
- Flood mitigation (2)
- Hunting & foraging opportunities (3)
- Public water supply (4)
- Aquifer replenishment (5)
- Soil quality improvement (6)
- Habitat generation (7)
- Improved nutrient cycling (8)
- Working landscape preservation and stewardship (9)
- Climate change adaptation (10)
- Recreation (11)
- Heritage and identity (12)
- Artistic inspiration (13)
- Sharing and creating knowledge (14)
- Aesthetic value (15)
- Economic benefits (16)
- Other (17) \_\_\_\_\_

Don't know (18)

Prefer not to answer (19)

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Q14 Below is a list of events that MAR might help prevent. Which are relevant where you work?  
Please select all that apply.

Flood (1)

Drought (2)

Pests (3)

Subsidence (4)

Water quality decline (5)

Aquifer decline (6)

Poor air quality (7)

Extreme heat (8)

Other (9) \_\_\_\_\_

Don't know (10)

Prefer not to answer (11)

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Q15 How concerned are you about flooding where you work?

	Not concerned at all (1)	Slightly concerned (2)	Somewhat concerned (3)	Moderately concerned (4)	Extremely concerned (5)
Level of concern (1)	0	0	0	0	0

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Q16 What are your concerns about flooding? (Please use full sentences and do not include identifying information)

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Q17 How concerned are you about drought where you work?

	Not concerned at all (1)	Slightly concerned (2)	Somewhat concerned (3)	Moderately concerned (4)	Extremely concerned (5)
Level of concern (1)	0	0	0	0	0

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Q18 What are your concerns about drought? (Please use full sentences and do not include identifying information)

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Q19 Here is a list of possible challenges to carrying out MAR projects. How much of a challenge would each of these be where you work?

	Not a challenge (1)	A little bit of a challenge (2)	Somewhat of a challenge (3)	A moderate challenge (4)	A significant challenge (5)	Not sure (7)
Navigating legal issues (e.g. water rights, permitting) (1)	0	0	0	0	0	0
Prior land uses (e.g., fertilizer, pesticide applications) may cause water contamination (2)	0	0	0	0	0	0
Current and future land uses (e.g., fertilizer, pesticide applications) may cause water contamination (3)	0	0	0	0	0	0
Source water may be contaminated (22)	0	0	0	0	0	0
Ensuring equitable distribution of MAR risks and benefits (4)	0	0	0	0	0	0
Not having sufficient local capacity and resources (e.g., funding and engineering challenges) (5)	0	0	0	0	0	0

Local stakeholders not being certain that MAR will be effective (6)	0	0	0	0	0	0
Protecting vulnerable communities from negative impacts of MAR (e.g., flooding) (7)	0	0	0	0	0	0
Ensuring local economies and livelihoods are protected from negative impacts of MAR (8)	0	0	0	0	0	0
Coordinating with diverse stakeholder groups (9)	0	0	0	0	0	0
Overcoming attitudes or perceptions of people in the region (10)	0	0	0	0	0	0
Getting landowner permissions (11)	0	0	0	0	0	0
Availability of water for MAR (12)	0	0	0	0	0	0
Addressing other logistical considerations (e.g., aligning project coordination with environmental events, such as rainfall, flood capture, and drought; conveyance) (13)	0	0	0	0	0	0

Navigating  
governance  
issues (e.g.,  
local, state,  
federal  
jurisdictions;  
conjunctive  
management)  
(14)

Real estate  
(e.g., land  
purchase,  
conservation  
easements)  
(19)

Not sure (24)

0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0

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Q20 How concerned are you that the benefits and costs of MAR projects might not be fairly distributed where you work?

	Not concerned at all (1)	Slightly concerned (2)	Somewhat concerned (3)	Moderately concerned (4)	Extremely concerned (5)
Level of concern (1)	0	0	0	0	0

Q21 What are your concerns and why? (Please use full sentences and do not include identifying information)

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Q22 Who should be part of making decisions about MAR where you work? (Please use full sentences and do not include identifying information)

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Q23 What do you believe the role of the US Army Corps of Engineers should be in advancing MAR projects where you work? (Please use full sentences and do not include identifying information)

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Q24 What tools (e.g., datasets, models, studies) would be valuable for carrying out MAR where you work?

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Q25 Here is a list of tools that might be useful for carrying out a MAR program. How useful would each be where you work?

	Not at all useful (1)	Slightly useful (2)	Neutral (3)	Very useful (4)	Extremely useful (5)	Not sure (6)
Guidance on where and what type of recharge (1)	0	0	0	0	0	0
Estimates of recharge potential (in acre-feet) (2)	0	0	0	0	0	0
Predictions of effect on groundwater levels (3)	0	0	0	0	0	0
Quantification of flood risk mitigation (4)	0	0	0	0	0	0
Valuation of ecosystem benefits (5)	0	0	0	0	0	0
Full cost-benefit analysis of project implementation (6)	0	0	0	0	0	0
Sensitivity of project benefits to climate change (7)	0	0	0	0	0	0
Not sure (8)	0	0	0	0	0	0

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Start of Block: Demographic Questions

Q26 Which of the following categories best describes the organization you work in?

▼ Government (Government agencies, institutions, and elected bodies) (4) ... Place-based community organization (Groups focused on community needs or holistic, place-based management) (7)

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Q27 What is your gender?

Male (4)

Female (5)

Non-binary (6)

Other: (7) \_\_\_\_\_

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Q28 In what year were you born?

▼ 1924 (4) ... 1993 (238)

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Q29 How long have you lived in your current city/town?

< 6 months (4)

6 months - 1 year (5)

1 - 3 years (6)

4 - 6 years (7)

7 - 9 years (8)

10 or more years (9)

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Q30 What is the highest level of education you have had the chance to complete?

▼ K-11th grade (4) ... Doctoral degree (PhD, EdD) (10)

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Q31 What is your race?

American Indian and Alaska Native (4)

Asian (5)

Black or African-American (6)

Native Hawaiian and Other Pacific Islander (7)

White (8)

Other: (9) \_\_\_\_\_

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End of Block: Demographic Questions

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