Please participate in the survey about Otsuchi's water environment

The Research Institute for Humanity and Nature has been conducting research regarding natural springs and the three-spined stickleback in Otsuchi since 2008. We have found some clues that suggest positive impacts of submarine springs on fish production in Otsuchi Bay. In this survey, we inquire about everyday water use. Please participate by answering the questions below.

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Section 1: Please answer questions about your da	ily water use.	
(1) Where do you live?		
() Own house		
() In temporary housing		
() Other ()	
(2) Do you have access to natural water (e.g., residence?	spring water, groundwater, well) is	n your
() Yes		
() No		
(3) What water sources did you use for the following Please circle major sources.	ng usage before the earthquake disast	ter?
1) Drinking and cooking	D: ()	`
Tap water Spring, well (groundwater) Purchased water Other (River water (upstream water))	
2) Laundry		
(Tap water Spring, well (groundwater)	River water (upstream water))
Purchased water Other ()	
3) Bathing		
(Tap water Spring, well (groundwater)	River water (upstream water))
Purchased water Other ()	J
4) Gardening and car washing		
(Tap water Spring, well (groundwater)	River water (upstream water))
Purchased water Other ()	

(4) How much do you pay for obtain	ing water?	
- Tap water	thousand yen per month	
- Purchased water	hundred yen per month	
- Groundwater (electricity bill	and maintenance fee)	
	thousand yen per month	
(5) Did you stay in Otsuchi in the tw	wo months immediately after the 2011 earthquake?	
() Yes [please go to Section	2]	
() No		
(6) What was your main residence u	antil recovery of the tap water system in May 2011?	
() Evacuation shelter		
() Own house		
() House of relatives or frie	nds	
() Other ()	
the earthquake? Please circle ma 1) Water for drinking Spring, well (groundwater)	ajor sources. River water, upstream water Emergency water at shelters Water sold or distributed at shops	
2) Cooking Spring, well (groundwater) Water distributed at shelters I did not cook during this period Other (River water, upstream water — Emergency water Water sold or distributed at shops .	
3) Laundry Spring, well (groundwater) From the Water distributed at shelters I did not wash clothes during the Other (River water, upstream water — Emergency water Water sold or distributed at shops is period.	

Bathing			
Spring, well (groundwater) River water, upstream water Emergency water)		
Water distributed at shelters Water sold or distributed at shops			
I did not take showers or baths during this period.			
Other ()		
(8) What were your main water sources for the subsequent month? Please circle major source	es.		
1) Water for drinking			
Spring, well (groundwater) River water, upstream water Emergency water)		
Water or beverages distributed at shelters Water sold or distributed at shops			
Other (
2) Cooking			
Spring, well (groundwater) River water, upstream water Emergency water)		
Water distributed at shelters Water sold or distributed at shops			
I did not cook during this period.			
Other ()		
3) Laundry			
(Spring, well (groundwater) River water, upstream water Emergency water	\		
Water distributed at shelters Water sold or distributed at shops			
I did not wash clothes during this period.			
Other (
Conter (
4) Bathing			
(Spring, well (groundwater) River water, upstream water Emergency water	١		
Water distributed at shelters Water sold or distributed at shops			
I did not take showers or baths during this period.			
Other ()		

Section	on 2: Please answer questions about rich natural water resources in Otsuc	ehi.	
(1) W	That do you consider good in terms of rich natural water resources? P	lease circle	all
ap	pplicable items.		
() Water that is free or low-priced		
() Tasty water		
() Resources that are beneficial for fisheries and other industries		
() Sustainable ecosystem, including rare species		
() Resources that become a core of local religion		
() Adequate emergency water supply		
() Other ()	

(2) Please indicate your levels of knowledge about the following items.

(2) I lease majoure your levels of knowledge about the following lie.	I did	I have	I know
	not	heard	this
	know	of this.	well.
	this.		
The Otsuchi River and Kozuchi River are major sources of ground			
water recharge in Otsuchi.			
The Machikata area of Otsuchi had about 200 flowing wells.			
Otsuchi Bay and Funakoshi Bay have many submerged springs.			
Submerged springs in the bays supply nutrient minerals.			
Salmon spawn in submerged springs in rivers.			
Groundwater is important for cultivating salmon.			
A rare group of pure-water three-spined sticklebacks lives in			
springs in Otsuchi.			
A new group of three-spined sticklebacks was observed after			
habitats of different groups of the fish species were mixed because			
of the tsunami.			

Section 3:

Many towns have shared wells of groundwater or upstream water. Some of these wells attract many tourists. The picture on the right is an example of such a well in Gujyo-Hachiman, Gifu. This well is properly maintained by the community members.

Otsuchi is loosing many of its wells owing to the construction of embankments to mitigate the effect of tsunamis. We are seeking a way to preserve wells by organizing the community to maintain and clean them.



Suppose a shared well of pristine groundwater or upstream water is built in your area of residence. The residents of the neighborhood are expected to maintain the well. Note that the well water is available for drinking to everyone and during both everyday life and natural disasters. For each of the following questions, please choose the best option.

(1) Please choose your most preferred alternative.

<u>Alternative 1</u>: The well is located 10m from your house. There is no annual maintenance fee, and your household is required to participate in a weekly cleaning rotation.

<u>Alternative 2</u>: The well is located 50m from your house. The annual maintenance fee is 1,000 yen per household, and your household is required to participate in a monthly cleaning rotation.

Alternative 3: There is no need for a well.

My most preferred alternative is ().

(2) Please choose your most preferred alternative.

<u>Alternative 1</u>: The well is located 50m from your house. The annual maintenance fee is 500 yen per household, and your household is required to participate in a monthly cleaning rotation.

<u>Alternative 2</u>: The well is located 100m from your house. The annual maintenance fee is 100 yen per household, and there is no need for cleaning work.

<u>Alternative 3</u>: There is no need for a well.

My most preferred alternative is ().

(3) Please choose your most preferred alternative.
Alternative 1: The well is located 100m from your house. There is no annual maintenance fee,
and your household is required to participate in a weekly cleaning rotation.
Alternative 2: The well is located 10m from your house. The annual maintenance fee is 1,000
yen per household, and your household is required to participate in a monthly cleaning
rotation.
Alternative 3: There is no need for a well.
My most preferred alternative is ().
(4) Please choose your most preferred alternative.
Alternative 1: The well is located 100m from your house. The annual maintenance fee is 500
yen per household, and there is no need for cleaning work.
<u>Alternative 2</u> : The well is located 10m from your house. The annual maintenance fee is 100 yen per household, and your household is required to participate in a weekly cleaning rotation.
Alternative 3: There is no need for a well.
My most preferred alternative is ().
Section 4:
(1) Please circle your gender.
Male Female
(2) Please circle your age category. 10s 20s 30s 40s 50s 60s 70s or higher
(3) Please insert the name of the district in which you lived before the earthquake disaster. If
you moved to Otsuchi after the disaster, please indicate so.
(
(4) Please provide the number of family members in your residence
(5) Do family members living in your residence represent any of the following categories? If so,
please circle all applicable categories.
Children of elementary school age or below
Children of middle or high school age
Elderly persons aged 65 or older

(6) Please circle your occupation.					
Government employee Private	e company	employee	Regional gr	oup memb	er
Family business or freelancer	Part-time	er Hous	sewife/husbar	nd	
No occupation Other					J
(7) If applicable, please circle your job f	ield.				
Fishery Agriculture Mining Telecommunication IT Logi Research Tourism Education	stics Re				
Other (1,10)			
(8) Are you engaged in community supplicable items.		ies in your re departm		ence? Pleas	e circle all
		re departm al staff		nteer activi	ties
(9) Please indicate levels of importance residence for the next 10 years.	for the fol	lowing iten	ns as if you w	ere choosin	g your
	Not	Not	Neither	Important	Definitely
	important	important	important		important
	at all		nor		
			unimportant		
Good public facilities					
Good natural environment					
Convenient for commuting					
Convenient for shopping					
Comfortable housing					
Few traffic accidents or crimes					
Many job opportunities					
Easy access to art and cultural					
activities					
Good medical and social support					

systems

Small chance of disaster