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REPUBLIC OF THE PHILIPPINES)
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SENATE
S. No. 1687

RECEIVED BY:

Introduced by **Senator Raffy T. Tulfo**

AN ACT INSTITUTING STRATEGIES TO ADDRESS AND MITIGATE THE DAMAGE CAUSED BY WEATHER ABERRATIONS AND NATURAL DISASTERS WHERE EXCESSIVE RAINWATER CAUSE MASSIVE FLOODING THAT DESTROY PROPERTY, LIVES AND INFRASTRUCTURE BUT UTILIZING THE SAME TO REMEDY PROBLEMS DUE TO LACK OF IT TO LESSEN THE IMPACT OF DROUGHTS, TYPHOONS AND EARTHQUAKES, STRENGTHENING THE ABILITY OF GOVERNMENT TO REDUCE AND CONTROL DISASTER ATTRIBUTABLE TO RAINWATER AND FOR OTHER PURPOSES.

EXPLANATORY NOTE

The issue of climate change has become more apparent over time. As the seasons pass, super typhoons and El Nio have become more intense, causing severe weather anomalies that have caused untold suffering to our people. These opposing natural phenomena have already strained the country's delicate ecological balance, necessitating immediate action to mitigate or prevent the damage they may cause.

The Philippines receives some of the world's highest rainfall in the form of tropical storms and super typhoons, the rainwater from which only ends up as run-offs inundating canals, rivers, and waterways, causing downstream flooding that destroys countless lives, properties, and crops. Climate change has also exacerbated global warming by causing more pronounced long periods of drought, resulting in

competition for the country's limited fresh water supply between agriculture and households.

So far, there is no viable solution in place to mitigate the negative effects of storm water. During a heavy downpour, city dwellers must wade through flood waters to reach their destinations. If they're lucky, their only concerns will be wet feet and common colds, but in the worst-case scenario, contact with rat urine can result in death from leptospirosis. More and more people are being displaced from flood plains in rural areas, and their homes are being swallowed up by landslides on mountain sides. A storm's wrath cannot be avoided.

Inversely during drought, water scarcity causes just as much suffering to all and to the ordinary citizen, his personal reasons are easy to comprehend. The likeliest solution when the rains do not arrive, subsurface water is resorted to. But this resource, too, is endangered as the water table goes deeper due to over-extraction. Since the introduction of the mechanical pump, water extracted from underground was never replenished purposely. The exacerbated extraction of subsurface water by large owners and operators of deep wells are drying up the aquifers in many areas forcing them to dig deeper to mine for fresh water causing in the process land subsidence, salt water intrusion and chemical leaching in ecologically fragile areas.

In contrast, during a drought, water scarcity causes just as much suffering to all, and the ordinary citizen's personal reasons are simple to understand. Subsurface water is the most likely solution when rain does not fall. However, this resource is also in jeopardy as the water table rises due to over-extraction. Since the invention of the mechanical pump, water extracted from the ground has never been purposefully replenished. Excessive subsurface water extraction by large owners and operators of deep wells is drying up aquifers in many areas, forcing them to dig deeper to mine for fresh water, causing land subsidence, salt water intrusion, and chemical leaching in ecologically sensitive areas.

There has never been a conscious effort to replenish the water extracted from underground since the invention of the mechanical pump more than a century ago. Large-scale subsurface water extraction was more intense in areas where rapid settlement development was not accompanied by a water utility company to serve the residents. The discovery of the West Valley Fault could have been precipitated by excessive underground water extraction in the eastern part of Metro Manila.

Mercury leaching into underground water has been observed in Angeles City, home to a US military base, and Las Pinas City, home to a company that manufactures mercury lamps. Because the volume of saltwater entering the aquifers is now greater than the volume of liquid fresh water coming from elevated areas, saltwater intrusion has rendered the subsurface water along the coastal towns in Cavite unfit for human and animal consumption. Because of their unique geology, settlements built on limestone structures are more vulnerable to E-Coli contamination in drinking water extracted below, as leachates from leaking septic tanks find their way into aquifers.

Because there is nothing that can be done to prevent the entry of typhoons and the occurrence of storms, there is an urgent need to implement storm water management measures to mitigate the impact of climate change, El Nino, tropical storms and super typhoons, natural phenomena, and problems caused by excessive subsurface water extraction. Rainwater is one water resource that has been overlooked as a major solution to our potable water problems. It was largely ignored in the past due to a lack of information and its absence from previous administrations' priority lists. However, with billions of pesos in damages from torrential rains and flash floods, it is critical that a new strategy be implemented and the agencies tasked with implementing it respond with equipped efficiency.

In view of the foregoing, the approval of this bill is earnestly requested.



Raffy T. Tulfo
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**AN ACT INSTITUTING STRATEGIES TO ADDRESS AND MITIGATE THE
DAMAGE CAUSED BY WEATHER ABERRATIONS AND NATURAL DISASTERS
WHERE EXCESSIVE RAINWATER CAUSE MASSIVE FLOODING THAT
DESTROY PROPERTY, LIVES AND INFRASTRUCTURE BUT UTILIZING THE
SAME TO REMEDY PROBLEMS DUE TO LACK OF IT TO LESSEN THE IMPACT
OF DROUGHTS, TYPHOONS AND EARTHQUAKES, STRENGTHENING THE
ABILITY OF GOVERNMENT TO REDUCE AND CONTROL DISASTER
ATTRIBUTABLE TO RAINWATER AND FOR OTHER PURPOSES.**

*Be it enacted by the Senate and House of Representatives of the Philippines in
Congress Assembled:*

1 Section 1. *Title* - This Act shall be known as "Rainwater Management Act of
2 2023".

3 Sec 2. *Declaration of Policy* – It shall be the duty of the State to serve and
4 protect the interest of its people by ensuring their safety and well-being always, more
5 so during the times of climate change where over abundance and extreme scarcity of
6 fresh water are the cause of devastation to property, lives and infrastructure thus
7 ruining the economy and bringing in untold suffering and misery.

8 The State shall promote and encourage the development and dissemination of
9 sustainable technologies that shall minimize the destructive effects of typhoons and
10 storms and maximize the exploitation of the rainwater they bring as a supplementary

1 source of fresh water that can be utilized for agriculture, domestic, commercial and
2 industrial purposes.

3 Thus, it is hereby declared that it shall be the policy of the State to identify potential
4 critical areas to climate change and natural disasters to instituting strategies to
5 preempt and abate their damage and provide relief therefor.

6 *Sec 3. Definition of Terms* – As used in this Act or in its Implementing Rules and
7 Regulations, the following shall be understood as:

- 8 a. "*Aquifer*" refers to a body of saturated, permeable and porous materials located
9 from under the earth's surface, including caverns, caves, sandstone,
10 conglomerate, fractured limestone and unconsolidated sand and gravel through
11 which liquid water can easily move and be stored.
- 12 b. "*Artificial aquifer recharging*" refers to the process of increasing the amount of
13 water that enters an aquifer through planned human intervention with the use
14 of machinery and materials that hasten the downwards travel of surface water.
- 15 c. "*Artificial recharge systems*" refers to the artificial method of assisting natural
16 percolation through mechanical means to hasten the conveyance of surplus
17 surface water to the aquifers and other subsurface water containment for the
18 purpose of mitigating downstream flooding due to run-offs, saltwater intrusion
19 and for the recovery of water for future use.
- 20 d. "*Chemical leaching*" refers to the contamination of the soil and groundwater of
21 chemicals and other pollutants coming from surface sources usually from
22 industrial plants, garbage dumps, households and from the application of
23 agricultural inputs.
- 24 e. "*Climate change*" refers to the change in the mean temperature of the earth
25 brought about by natural phenomena made worse by human-induced activity.
- 26 f. "*Downstream flooding*" refers to the collection of unusually large volume of
27 rainwater that falls on the earth surface elsewhere and flows to inundate low
28 lying areas.
- 29 g. "*El Niño phenomenon*" refers the abnormal weather pattern caused by the
30 warming of the Pacific Ocean near the equator off the coast of South America

1 bringing heavy rains La Niña to the western hemisphere and long dry spell to
2 the eastern hemisphere.

3 h. "*Evapotranspiration*" refers to the combined net effect of evaporation, which is
4 the return of moisture to the atmosphere from the earth's surface, and
5 transpiration, which is the process by which plants return moisture to the air.

6 i. "*Groundwater*" refers to all forms of water that occurs naturally from sources
7 below the soil surface including wells, springs, aquifers and subterranean
8 vaults.

9 j. "*Hydrogeological profile*" refers to the description of the distribution and
10 movement of groundwater in the soil and rocks of the Earth's crust, commonly
11 as aquifers.

12 k. "*Land subsidence*" refers to the loss of substantial regional surface elevation
13 due to human activities or natural processes that result to removal of
14 subsurface support.

15 l. "*Natural disasters*" refers to natural events such as a flood, earthquake,
16 typhoon, storm or hurricane that causes great damage to resources or loss of
17 life:

18 m. "*Natural recharge*" refers to that part of the water cycle that occurs after rain
19 or snow infiltrate the soil and percolates downwards through aerated soil due
20 to gravity without purposed human intervention.

21 n. "*Rainwater harvesting*" refers to the process of collection of rainwater from
22 surfaces on which rain falls, filtering it and storing it for multiple uses.

23 o. "*Salt water intrusion*" refers to the movement of saline water in coastal areas
24 into freshwater aquifers rendering underground fresh water resources brackish
25 or salty.

26 p. "*Subsurface water*" refers to all solid, liquid or gaseous forms of water that
27 occurs beneath the earth's surface.

28 q. "*Surface water*" refers to all naturally occurring water found in estuaries, lakes,
29 rivers, pond, reservoirs, ponds, seas, etc.

30 r. "*Weather aberration*" refers to a departure from what is normal, usual, or
31 expected, in the weather system typically one that is unwelcome.

32

1 Sec 4. *General Provisions* – The National Water Resources Board (NWRB) shall be
2 the lead agency, in coordination with the National Disaster Risk Reduction
3 Management Council (NDRRMC) and the Department of Public Works and Highways
4 (DPWH) and other agencies, in the formulation and implementation of plans and
5 strategies to address and mitigate the damage caused by weather aberrations and
6 natural disasters where excessive rainwater cause massive flooding that destroy
7 property, lives and infrastructure by utilizing the same to remedy problems due to lack
8 of it to lessen the impact of droughts, typhoons and earthquakes, and strengthening
9 the ability of government to reduce and control disaster attributable to rainwater.

10 Sec 5. *Specific Provisions.* - The NWRB, pursuant to its mandate already
11 conferred by law, is hereby directed undertake activities similar but not limited to the
12 following:

- 13 a. Inspect, compile and report data of inland waterbodies and waterways on
14 potential disaster areas and reporting the same to the NDRRMC;
- 15 b. Conduct a national hydro-geological profile;
- 16 c. Provide technical assistance in the design, construction and implementation of
17 rainwater harvesting and artificial recharge systems; and
- 18 d. Enforce all laws and ordinances pertaining to the preservation of the well-being
19 of aquifers as sustainable source of potable fresh water.

20
21 The NDRRMC, pursuant to its mandate already conferred by law, is hereby directed to
22 provide a listing to the NWRB and the DPWH disaster prone and environmentally
23 fragile areas that are likely the site of an occurring disaster due to downstream
24 flooding.

25
26 The DPWH, pursuant to its mandate already conferred by law, is hereby directed to
27 design and construct infrastructure that would minimize disaster due to rainwater and
28 to harvest and store the rainwater for beneficial use.

29
30 Sec 6. *National Hydro-geological Profiling.* – The NWRB, with the help of the
31 Bureau of Soils and Water Management (BSWM) of the Department of Agriculture,

1 shall conduct within six (6) months from the enactment of this Act to conduct hydro-
2 geological profiling for the entire country.

3 *Sec 7. Rainwater Harvesting for Storage and for Artificial Aquifer Recharging*
4 *for Groundwater Replenishment, Flood Control and for Rainwater* – All construction,
5 henceforth, of new infrastructure, buildings, homes, factories and commercial
6 establishments shall incorporate in their design provisions for storage and for artificial
7 recharging of the aquifers. Existing infrastructure, buildings, homes, factories and
8 commercial establishments shall be given two (2) years from the effectivity of this Act
9 to retrofit and install rainwater storage and artificial recharge systems.

10 *Sec 8. Rainwater Harvesting on Elevated Areas for Flood control* – With the
11 use of the national hydro-geological profile data generated by the NWRB, the DENR
12 and the DPWH shall study the contour of elevated areas, hills and mountains for the
13 construction of rainwater storage systems and artificial aquifer recharging units to limit
14 the volume of runoff that cascade into low lying areas thereby causing downstream
15 flooding.

16 *Sec 9. Rainwater Harvesting for Homes and Group Settlements* – All residential
17 units shall be required to install their individual rainwater storage systems that shall
18 form part of the rainwater harvesting and recharging system of the group settlement
19 collectively developed. The rainwater harvesting storage system may be integrated in
20 the settlement's wastewater treatment facility. Treated waste water, however, shall
21 not be allowed to be injected into the aquifer.

22 *Sec 10. Rainwater Harvesting for Commercial Establishments and Industries* –
23 All commercial buildings and establishments shall be required to install their rainwater
24 storage systems that shall form part of their rainwater harvesting and recharging
25 system. The rainwater harvesting storage system may be integrated in their
26 wastewater treatment facility. Treated waste water, however, shall not be allowed to
27 be injected into the aquifer.

28 *Sec 11. Rainwater Harvesting for Schools* – All schools, public and private, shall
29 be required to install their rainwater storage systems that shall form part of their
30 rainwater harvesting and recharging system. The rainwater harvesting storage system
31 may be integrated in the schools' wastewater treatment facility. Treated waste water,
32 however, shall not be allowed to be injected into the aquifer.

1

2 *Sec 12. Rainwater Harvesting for Agriculture* – All individuals and companies
3 engaged in agriculture are hereby encouraged to practice natural farming to prevent
4 the leaching of harmful chemicals into the aquifers. The LGUs shall within their
5 jurisdiction construct and install rainwater storage and artificial aquifer recharging
6 systems.

7 The LGUs shall also make a requirement for registration to companies within their
8 jurisdiction engaged in agriculture to construct and install rainwater storage and
9 artificial aquifer recharging systems which may be integrated in their wastewater
10 treatment facility. Treated waste water, however, shall not be allowed to be injected
11 into the aquifer.

12 *Sec 13. Penalties* – Any person or entity, natural or juridical, found violating or
13 cause the obstruction or hamper the implementation of this Act including its
14 Implementing rules and Regulations shall be meted any or all of the following:

- 15 a. Pay fine of Five Million Pesos (P5,000,000.00) or imprisonment from six months
16 to six years, or both;
- 17 b. If the offense is committed by a juridical entity, the penalty shall be imposed
18 against the officers, employees and members who participated in the
19 commission of the offense, without prejudice to the filing of civil and
20 administrative charges against the juridical entity;
- 21 c. Any person or entity who shall cause to obstruct, prevent or refuse the
22 inspection pursuant to the visitorial powers of implementing agencies of
23 properties, private or public domain, shall be held criminally and shall be liable
24 to pay fine of not exceeding One Hundred Thousand Pesos (P100,000.00) or
25 imprisonment of not exceeding one (1) year, or both.

26 *Sec 14. Fees, Administrative Fines and Sanctions* – The NWRB shall be empowered
27 to undertake the any of the following or other mode of action in conformity to the
28 intent of this Act:

- 29 a. Suspend, revoke or cancel outstanding water extraction permit found in
30 violation of this Act or its Implementing rules and Regulations;

- 1 b. Issue cease and desist order against any person or entity found in violation of
2 the provisions of this Act or its Implementing Rules and Regulations;
- 3 c. Declare any person or entity in contempt for the violation this Act and its
4 implementing Rules and Regulation and shall be punished similarly as in any
5 indirect contempt of the Courts;
- 6 d. Promulgate rules and regulations, orders and decisions for compliance and set
7 fines and sanctions for failure; and
- 8 e. Retain collected fees, revenues, fines and other impositions with the agency
9 which shall be used as trust fund for the furtherance of the implementation of
10 this Act.

11 Sec 15. *Appropriations* – The initial funding necessary for the implementation of
12 this Act shall be sourced from the current fiscal year appropriation of the NWRB and
13 such amounts as maybe identified by the President of the Republic of the Philippines,
14 thereafter, the amount needed for the operation the agency for the implementation
15 of this Act shall be included in the annual General Appropriations Act.

16 Sec 16. *Implementing Rules and Regulations* - The NWRB in coordination with the
17 DA, DENR, DOST and the DPWH, with the participation of concerned committees from
18 the House of Representatives and the Senate, shall promulgate the Implementing
19 Rules and Regulations within ninety (90) days from its enactment for the proper
20 implementation of this Act.

21 Sec 17. *Repealing Clause* - All laws, decrees, executive orders, memorandum
22 orders, memorandum circulars, administrative orders, ordinances or any part thereof,
23 inconsistent of this Act are hereby deemed repealed or modified accordingly.

24 Sec 18. *Separability Clause*. - In the event that any provision of this Act is declared
25 unconstitutional, the validity of the remainder shall not be affected thereby.

26 Sec 19. *Effectivity*. - This Act shall take effect fifteen (15) days after its complete
27 publication in the Official Gazette or in at least two (2) newspapers of general
28 circulation.

Approved.