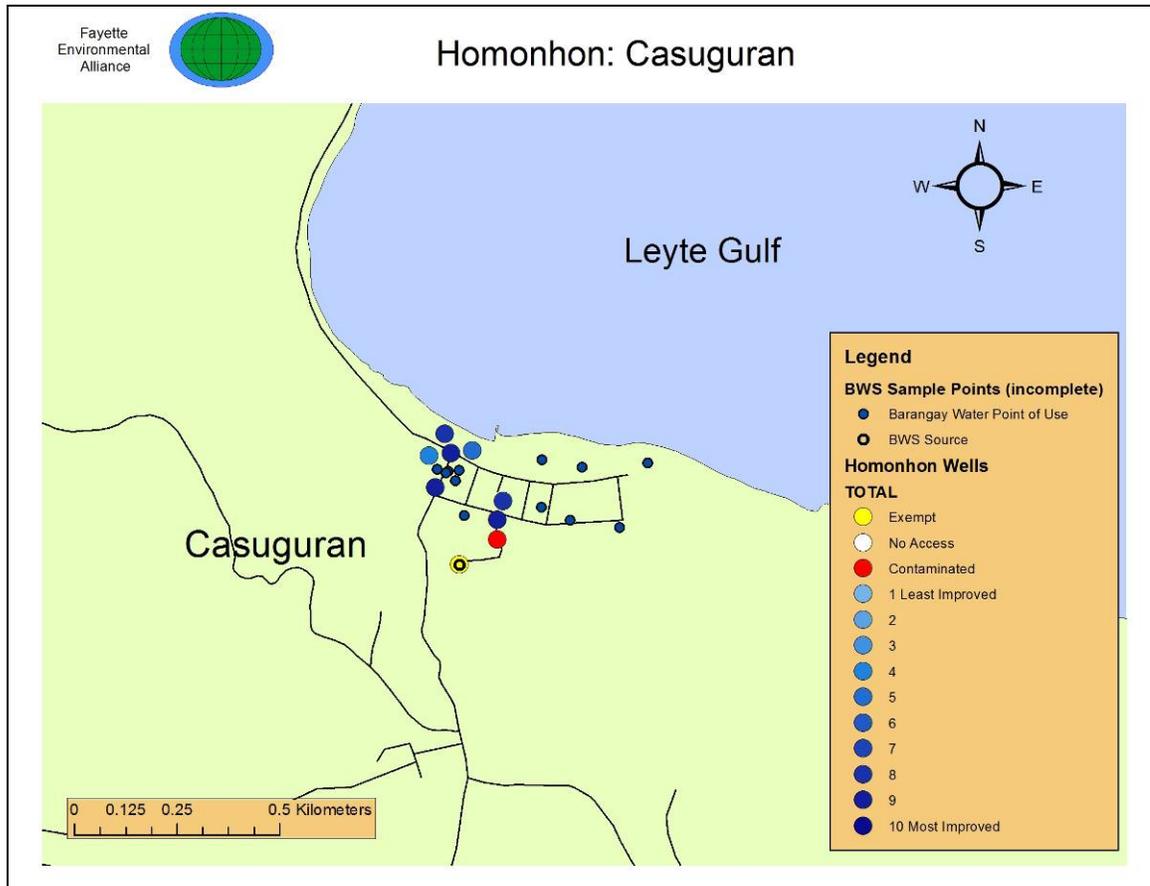


Figure 23: Summary Table of Survey Results

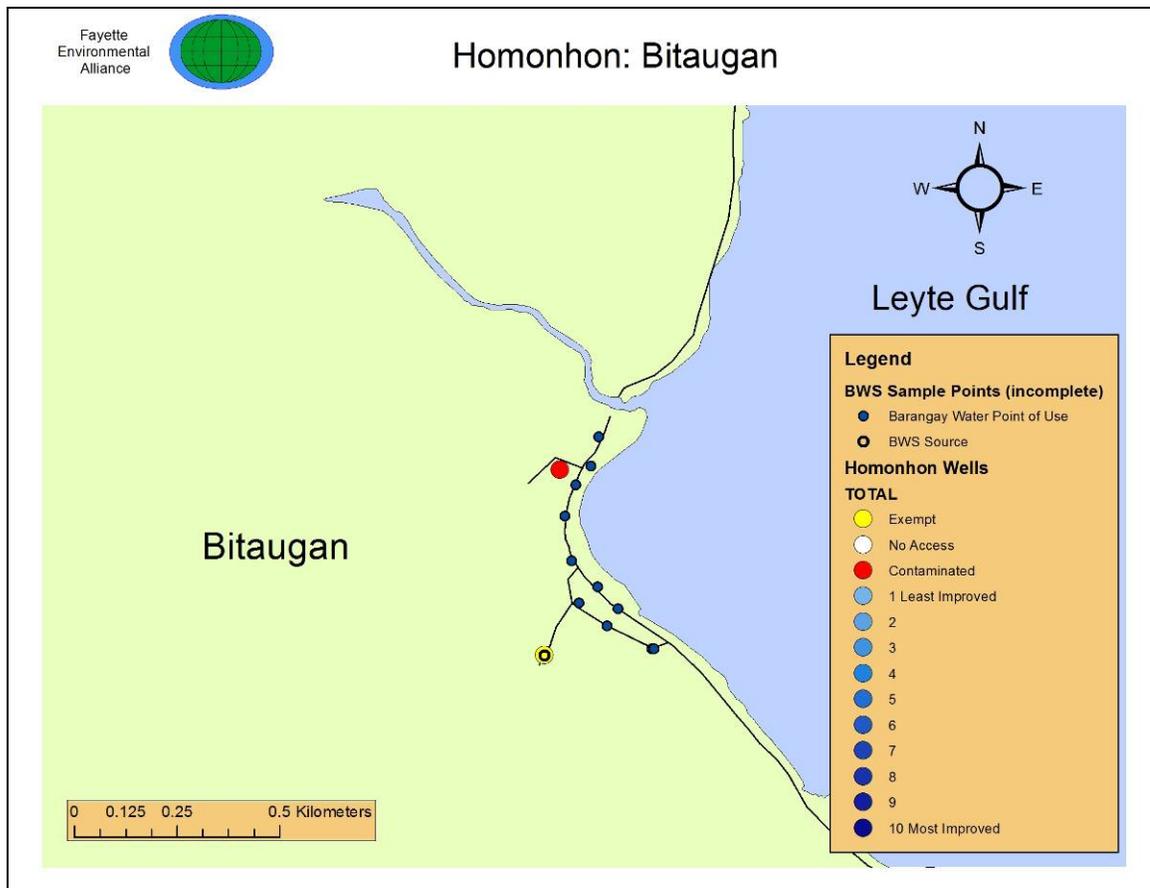
Barangay Name	Date Completed	Count	Mean	S.D
Alangarog	September 15, 2014	15	6.2	2.3
Bucaao	September 16, 2014	11	4.2	2.6
Cagdara-o	September 19, 2014	8	6.6	2.3
Mayana	September 22, 2014	9	7.7	0.9
Timala	September 27, 2014	4	8.0	0
Banahao	September 27, 2014	3	8.0	0
Bagua	September 27, 2014	6	7.8	0.4
Hagna	September 27, 2014	13	8.0	0
Gahoy	September 29, 2014	4	8.5	0.5
Cantahay	October 1, 2014	60	7.2	2.2
Sapao	October 2, 2014	51	7.12	2.3
Dalaragan	September 19, 2014	12	7.1	2.9
Bungtod	October 17, 2014	30	5.7	2.6
Baras	September 20, 2014	93	6.1	2.3
Barbo	October 7, 2014	28	6.5	2.6
St.Nino	October 10, 2014	4	7.7	1.6
Sulangan	August 2, 2014	60	4.6	1.9
Suluan	October 14, 2014	Incomplete data		
Tagpuro	October 18, 2014	28	6.5	2.2
Taytay	October 6, 2014	32	5.6	2.7
San Antonio	October 11, 2014	24	3.75	2.8
San Juan	November 13, 2014	11	4.5	2.4
Trinidad	November 8, 2014	13	4.8	2.9
Camparang	November 9, 2014	18	6.5	3.5
San Pedro	November 8, 2014	13	3.2	1.8
San Jose	October 8, 2014	8	4.1	2.0
Banaag	October 8, 2014	25	5.7	2.1
Buнавista	October 10, 2014	35	6.4	2.3
Hamorawon	July 15, 2018	9	4.2	3.3
Baras	November 11, 2014	94	6.1	2.7
Ngolos	November 15, 2014	26	5.5	2.3
Pagnamitan	November 16, 2014	42	6.3	2.7
Campoyong	November 22, 2014	36	6.0	2.0
Surok	November 23, 2014	7	7.1	3.0
Salug	November 22, 2014	27	7.3	2.0
Cogon	November 24, 2014	22	7.9	0.3
Lupok	November 27, 2014	70	6.8	2.5
Casuguran	December 6, 2015	8	5.8	3.3
Bitaugan	December 6, 2015	1		
Cagusu-an	December 7, 2015	1		
Culasi	December 8, 2015	4		
Pagbabangnan	December 8, 2015	0		

Barangay Summaries



Number of Wells Sampled: 8
 Average Improvement Score: n/a

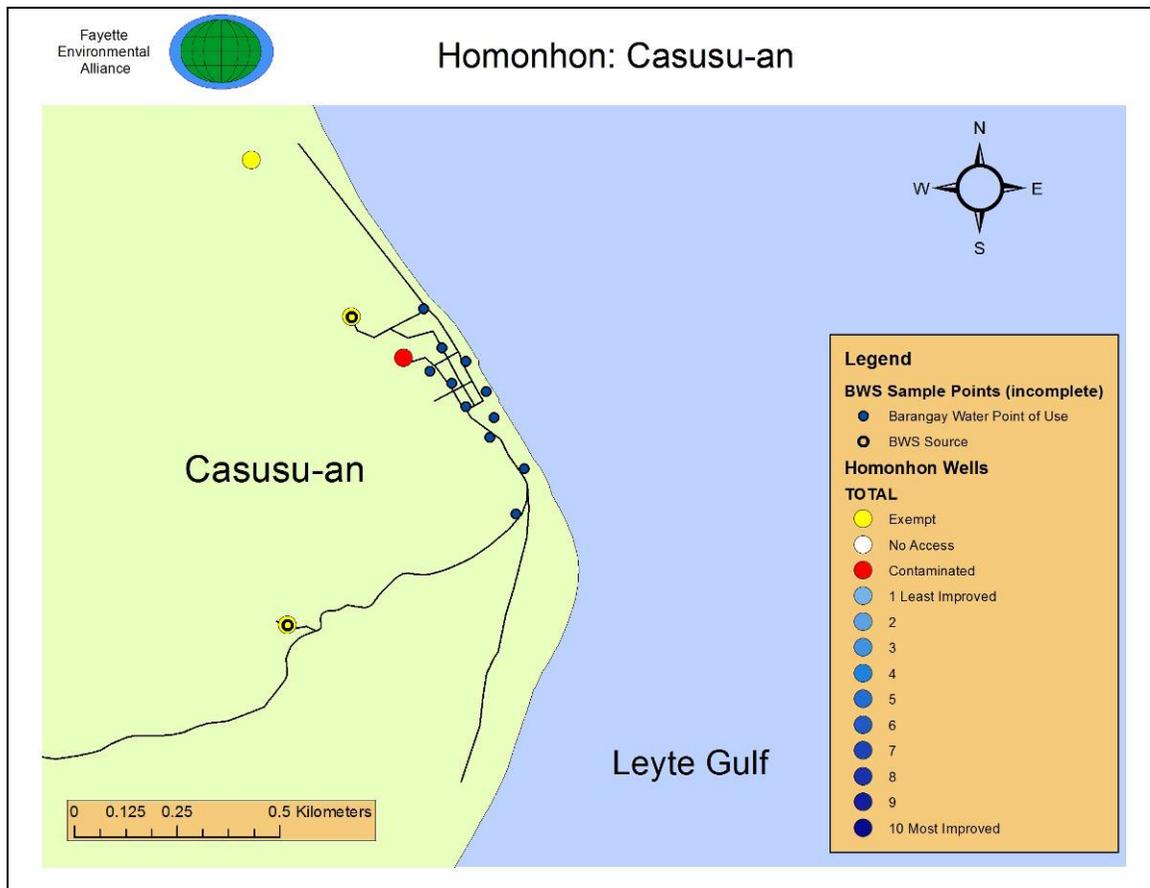
Casuguran is has two major streams, one of which is captured upstream, providing piped water to residents and common concrete basins throughout the barangay. There is also a stream running along one of the main roads that has a small waterfall and cascades on its way to the sea. One area of concern is an unused well behind the hospital that is collecting trash which includes broken florescent bulbs. It looks like this well may have been filled, when it was decommissioned. To properly decommissioned a well, it should be covered at or about the grade of the ground to prevent collection of trash that could leach into the ground water affecting the nearby water supply for the hospital.



Number of Wells Sampled: 1
 Average Improvement Score: n/a

The stream capture box along the stream near the elementary school is secure and strong. Below the box there is a swimming pool for recreation, and other utility purposes. The well associated with the destroyed barangay "solar" system has been filled in with debris and trash. Since there is no other well that would be affected by any potential contamination, it is not a major concern.

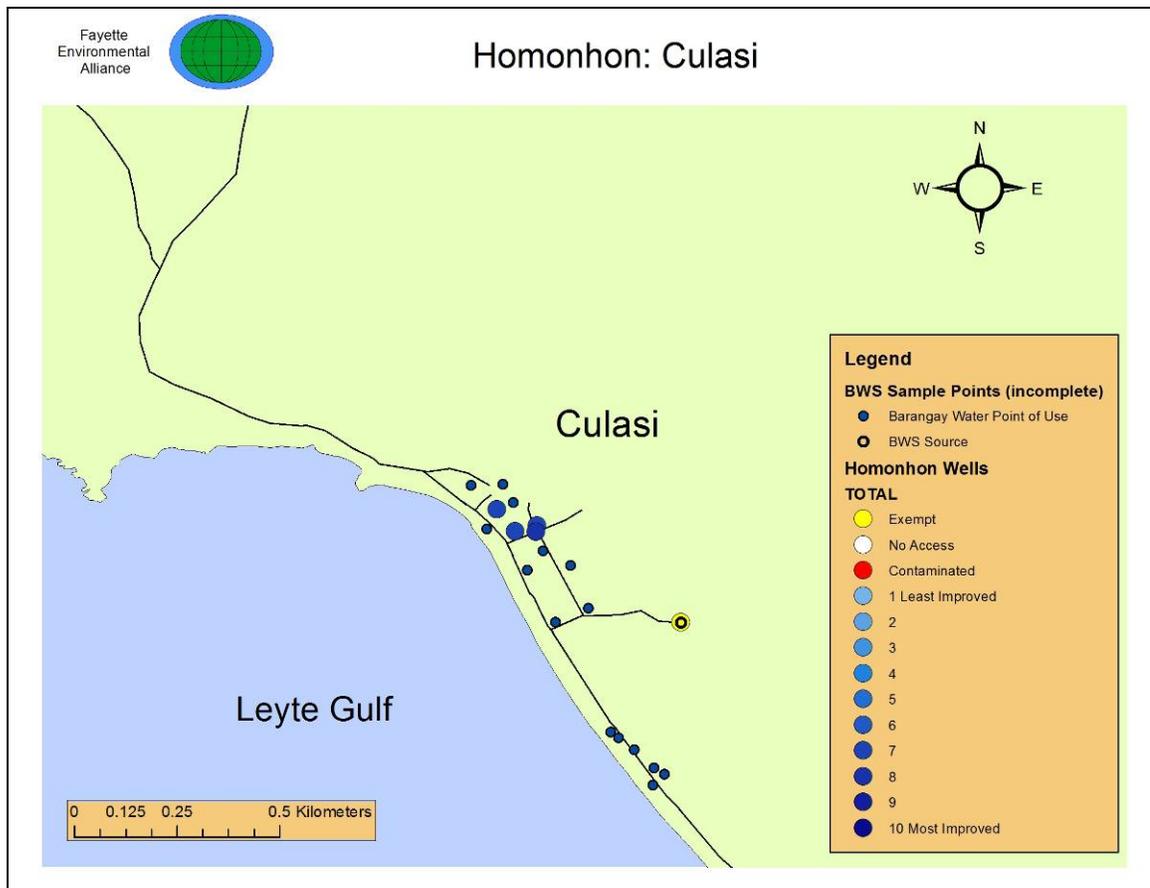
As a side note, Bitaugan is the calamansi capital of the world. Perhaps not, but they are a major producer the residents are proud of the fact that they are a leading grower of this small citrus fruit. It is similar to a lime, but smaller and it turns yellow when ripe with an orange inside.



Number of Wells Sampled: 1
 Average Improvement Score: n/a

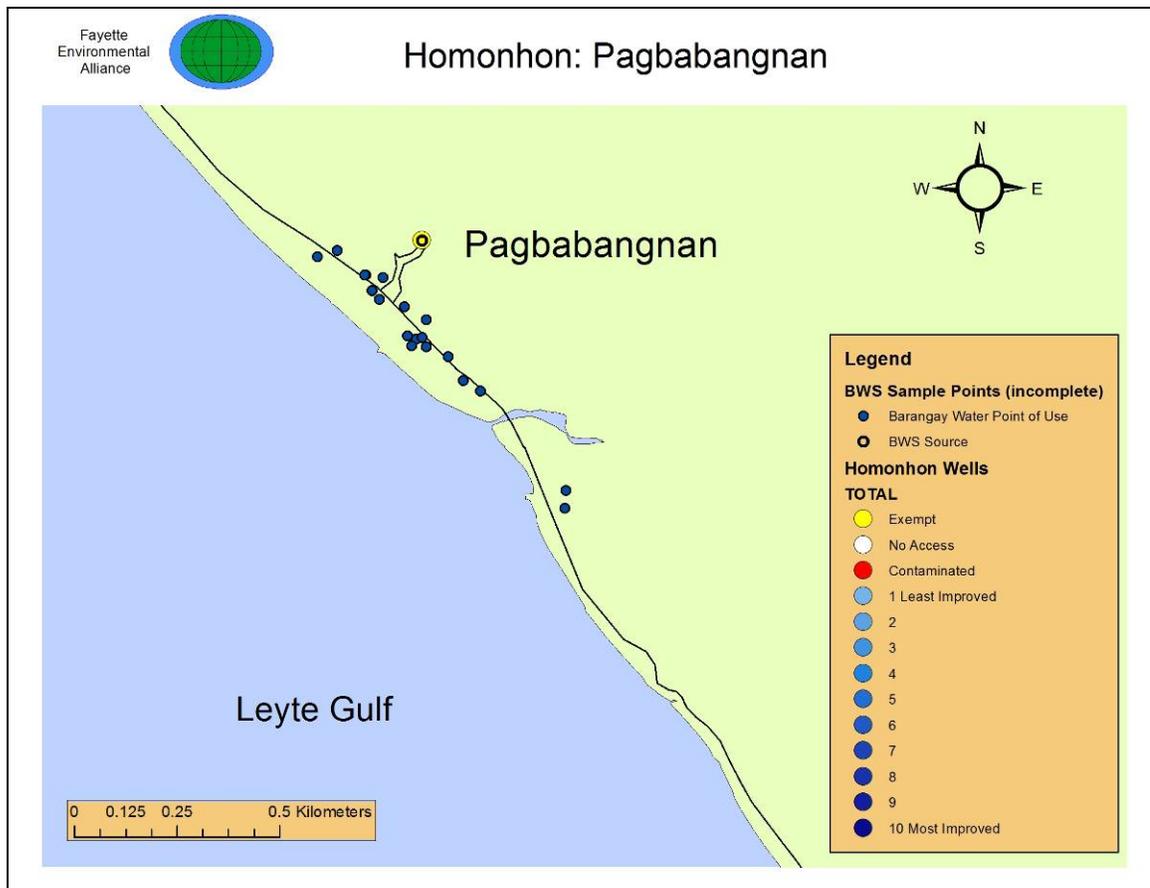
Casusu-an is exclusively served by a Piped Barangay Water system with two main sources. One is a capture box and the other is an upstream dam. The exempt well to the north of main population center is a small flow, spring capture pipe that serves a few houses. The Contaminated well is the former source of the "solar" BWS knocked out by Yolanda. It is now unsecured collecting debris. Not a major concern.

The way to Casusu-an takes you through the Cambayas Mining Company land. To get to the barangay we hitched a ride on a company dump-truck to the top and the Barangay Captain of Casusu-an gave us a ride down to the barangay on his motorcycle. The barangay captain of Casusu-an is also an employee of Cambayas. We were treated to lunch by barangay staff. Thanks to all there for the hospitality and support.



Number of Wells Sampled: 4
 Average Improvement Score: n/a

Culasi is served by a single stream capture box with water piped throughout the barangay. The four dug wells are secure, good design and most have a jetmatic pump. There is one elderly lady that needs help getting her pump fixed. I promised I would mention this in this report. Three of the wells do not have removable covers facilitating easy access in case of an emergency, pump problems, or a water quality problem. If the cover has to be removed, then perhaps the covers could be better designed when replaced.

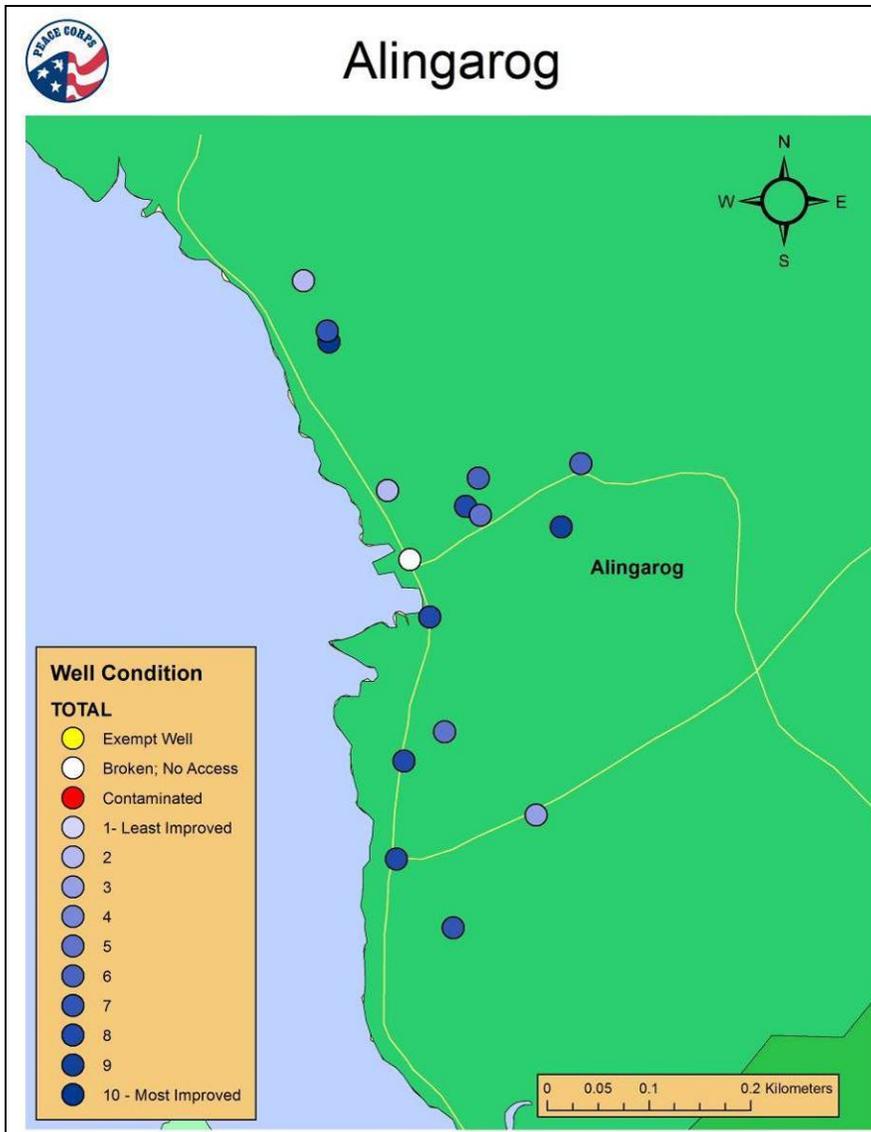


Number of Wells Sampled: 0
 Average Improvement Score: n/a

Pagbabangnan has a stream capture box, has no wells, and is served by a network of concrete walkways and roads. The barangay captain tells me that about 85% of households have water service and his goal is 100%. The water is so plentiful and high quality, that in first desperate days following Typhoon Yolanda, water was shipped from Pagbabangnan to Guiuan proper. There is a swimming pool/laundry area below the source that is well designed incorporating the natural aesthetics of the location with concrete additions. There are also public restroom facilities nearby.

I would like to thank the Barangay Captain for the hospitality he showed me during my visit. I was fortunate to find a party going on there, and I was invited to attend. The road heading south will take you to Magellan's landing site. I attempted to walk to it, making it three-quarters of the way. When I gave up and turned back, a mining employee on a motor cycle rescued me and took me back to Pagbabangnan.

As a side note, Pagbabangnan has the longest and most difficult name to pronounce of all the barangays of Guiuan. During my stay here, I struggled to get place names right.



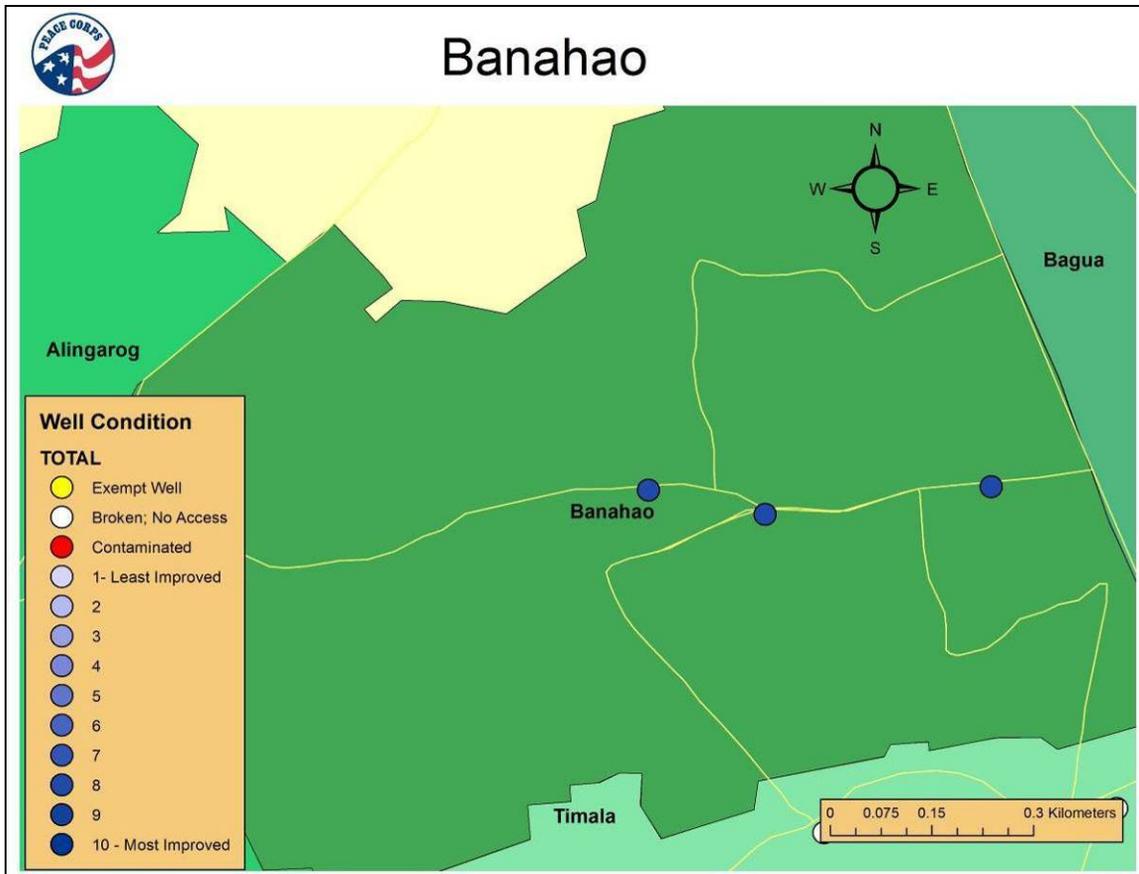
Number of Wells Sampled: 15

Average Improvement Score: 6.2

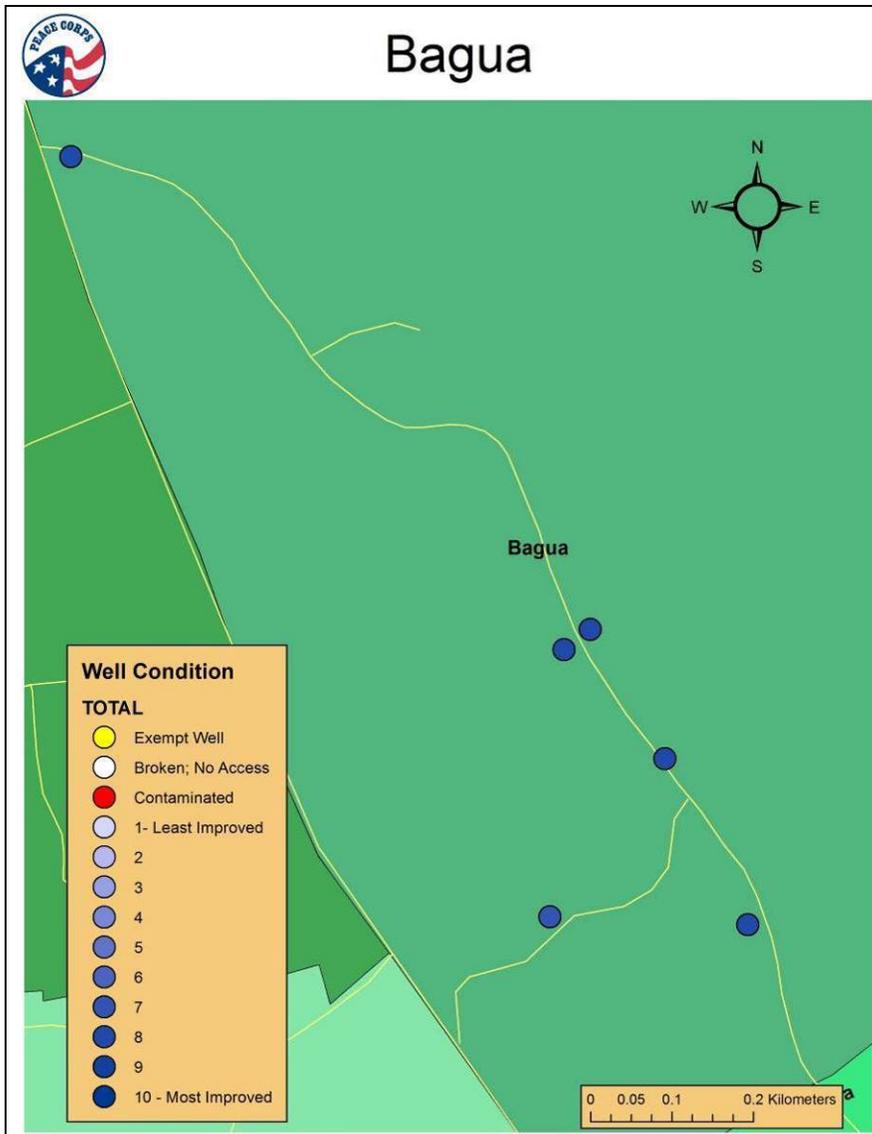
Issues: Iron in water

Priorities: Replacement of Barangay Water System; Repair Well-07 at Plaza.

Alingarog is in the Northwest corner of the Peninsula along the Leyte Gulf coast. The water table is less than a meter from the surface. The inaccessible well at the plaza is the BWS. Even though the solar pump and tank are destroyed, the residents should still be able to access water at the manual pump



Number of Wells Sampled: 3
 Average Improvement Score: 8.0
 Issues: Few sources of Water
 Priorities: Bring Municipal Water System (Mercedes connection) online.
 Banahao is in the north of the Peninsula along the boundary with Mercedes bordering the National Road to the west. It had a newly installed stand-alone Barangay Water System (Y-S Men). There is a MWS line running from Mercedes that as of the survey date had yet to be brought on line.



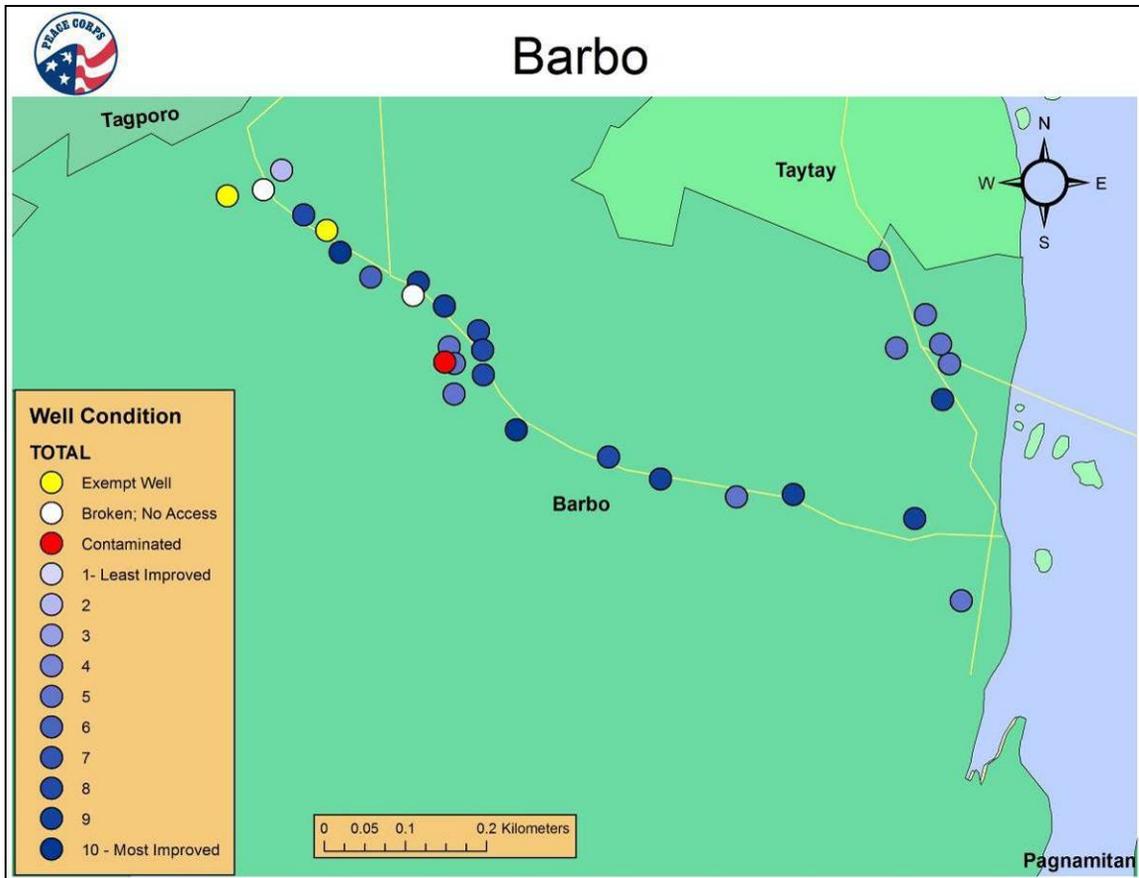
Number of Wells Sampled: 6

Average Improvement Score: 7.8

Issues: Few options for water along highway.

Priorities: Bring Municipal Water System (Mercedes connections) online.

Bagua is in the north of the Peninsula along the boundary with Mercedes with the National Road on the west and the Pacific Coast Ridge to the east. Its wells are mainly of the "artesian" style with a newly installed pump (Operation Blessing) near the Plaza. There are MWS lines running from Mercedes, that as of the survey date (Sept-27), had yet to be brought on line.



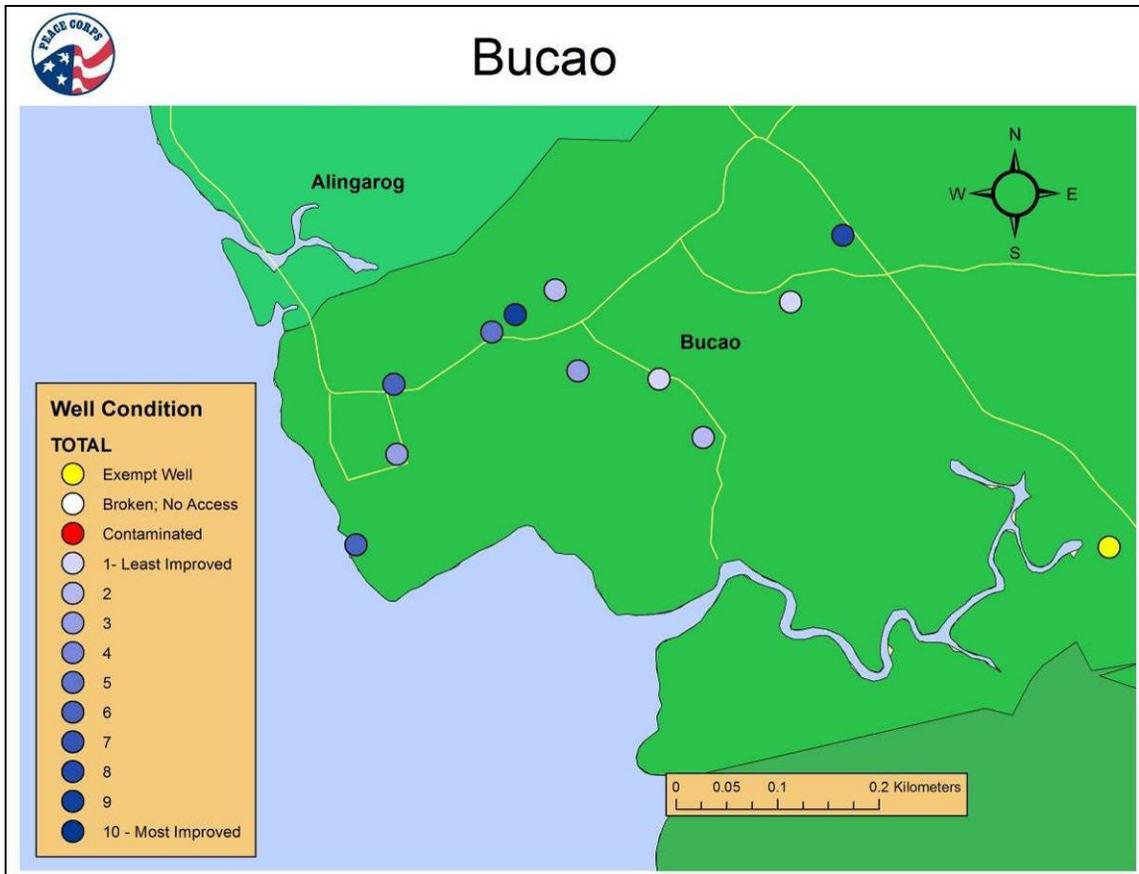
Number of Wells Sampled: 26

Average Improvement Score: 6.6

Issues: Broken pumps in common areas, No BWS, Contaminated Well.

Priorities: Clean Contaminated Well-13; Restore Well-01.

Barbo is at the southern tip of the Peninsula and contains the connecting bridge to Calicoan Island. Wells are mainly of open with "Jetmatic" pumps. There are MWS connections along the national road as well as the coastal road to the south. Well-03 (natural setting) and Well-05 (superior construction) are possible candidates for preservation in their current state. Well-18 is remarkable due to its superior designed cover. The barangay captain was instrumental in its improvement.



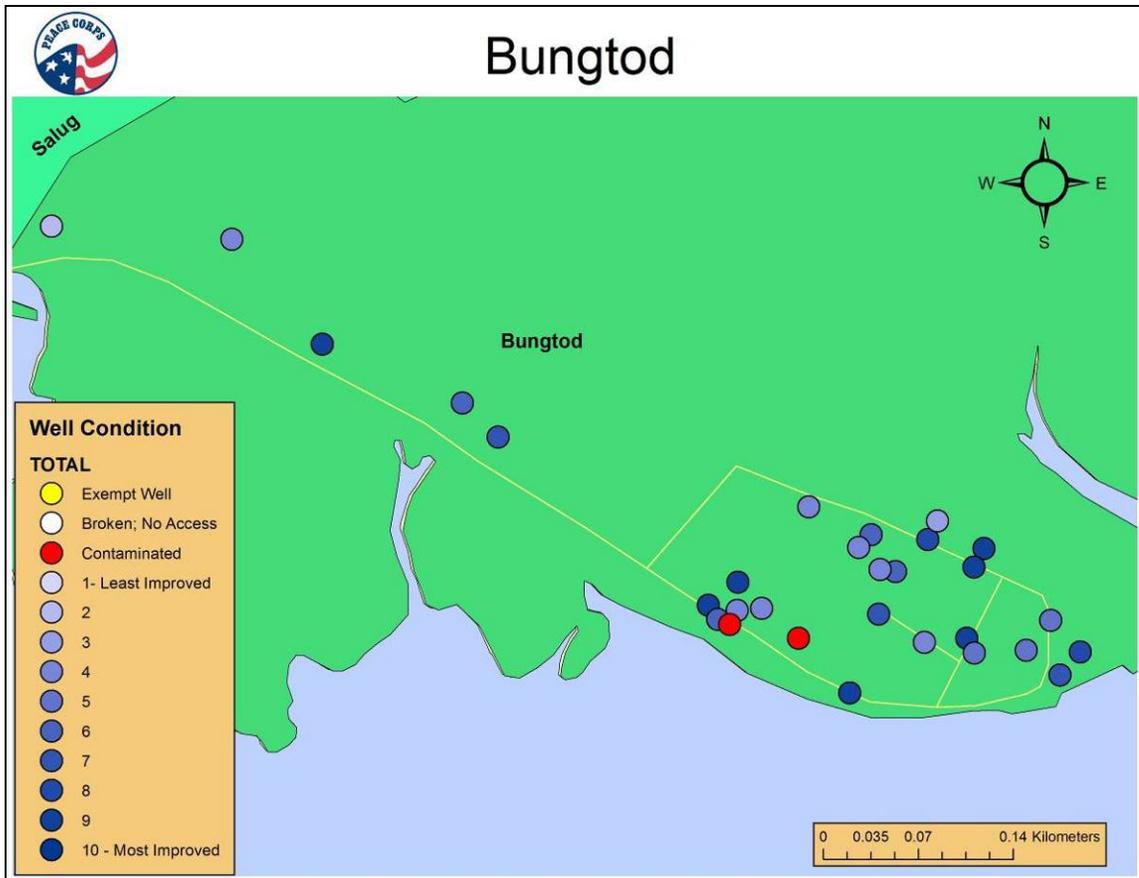
Number of Wells Sampled: 11

Average Improvement Score: 4.2

Issues: Few improved wells. No BWS.

Priorities: Restore BWS. Improve Wells, Clean Litter from spring area.

Bucao is located on the Leyte Gulf side, northwest on the Peninsula. The BWS was destroyed by the Typhoon and has not been replaced. There is one well with a pump that is centrally located that residents rely upon for water for utility purposes. There is a spring on the way to Cagdara-o with some improvements; however it is only useable at low tide. It is generally trashed.



Number of Wells Sampled: 30

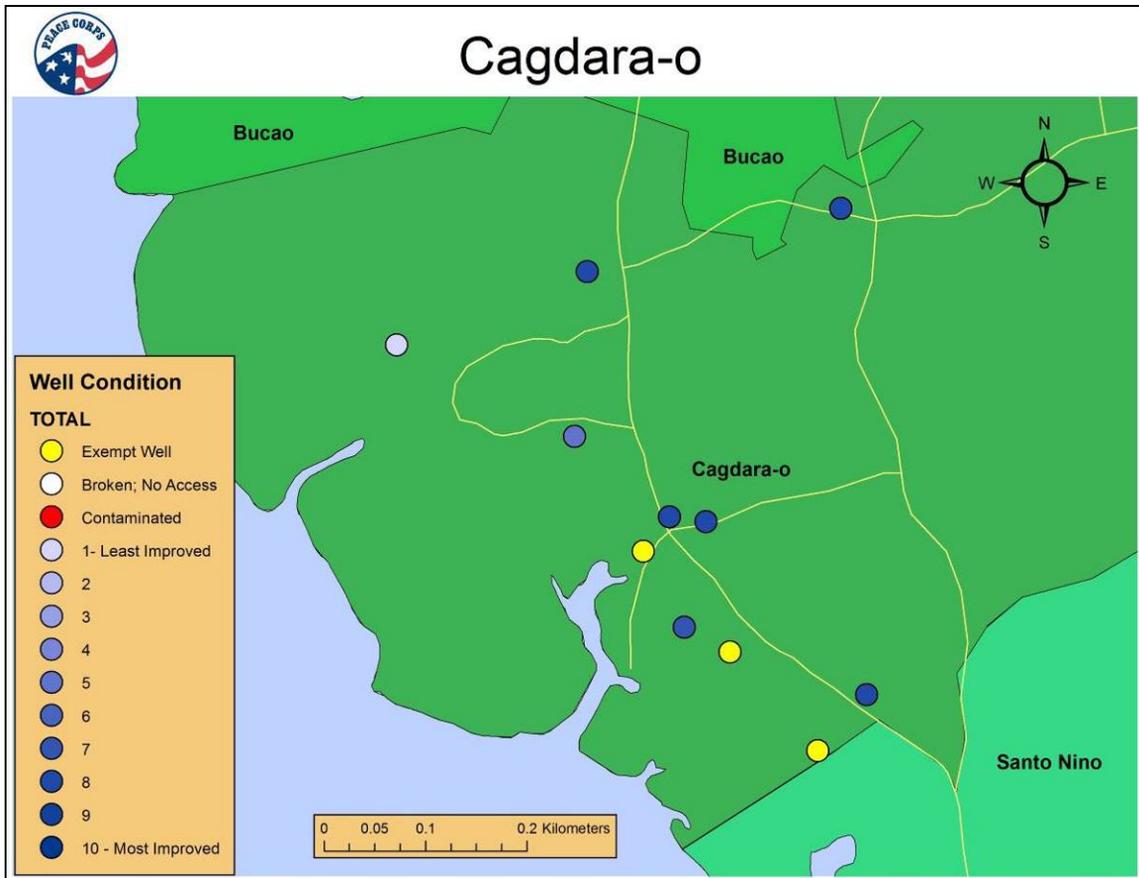
Average Improvement Score: 5.7

Issues: Contaminated, Well-17 & Well-19. Extensive erosion at base of wells from Typhoon evident.

Priorities: Clean and restore contaminated wells, well covers and aprons

Bungtod is located at the southern end of the peninsula and is situated in an area surrounded by mangroves and nipa. The barangay has both a functioning BWS side-by-side with MWS taps.

The two contaminated wells are on Yolanda affected properties.



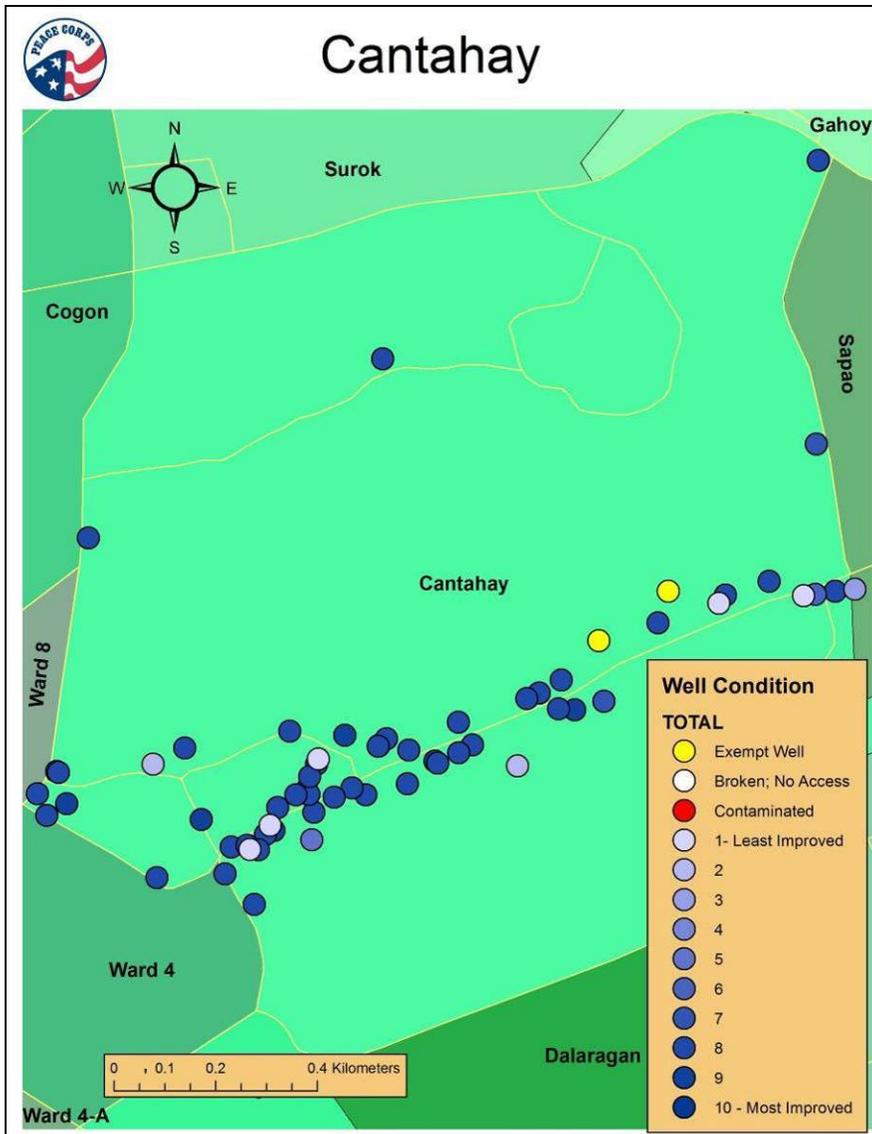
Number of Wells Sampled: 8

Average Improvement Score: 6.6

Issues: BWS not yet drinkable or reliable source for higher elevations of the barangay.

Priorities: Expand BWS capability to higher elevations.

Barangay is blessed with three spring areas. One is a large swimming pool enjoyed by all age groups, for washing, bathing and recreation. Local leadership has improved the source extensively with a dam to control the flow from the sea and drainage channels to keep surface runoff from contaminating it. Two smaller springs are well maintained and deserve ongoing preservation in their current state.



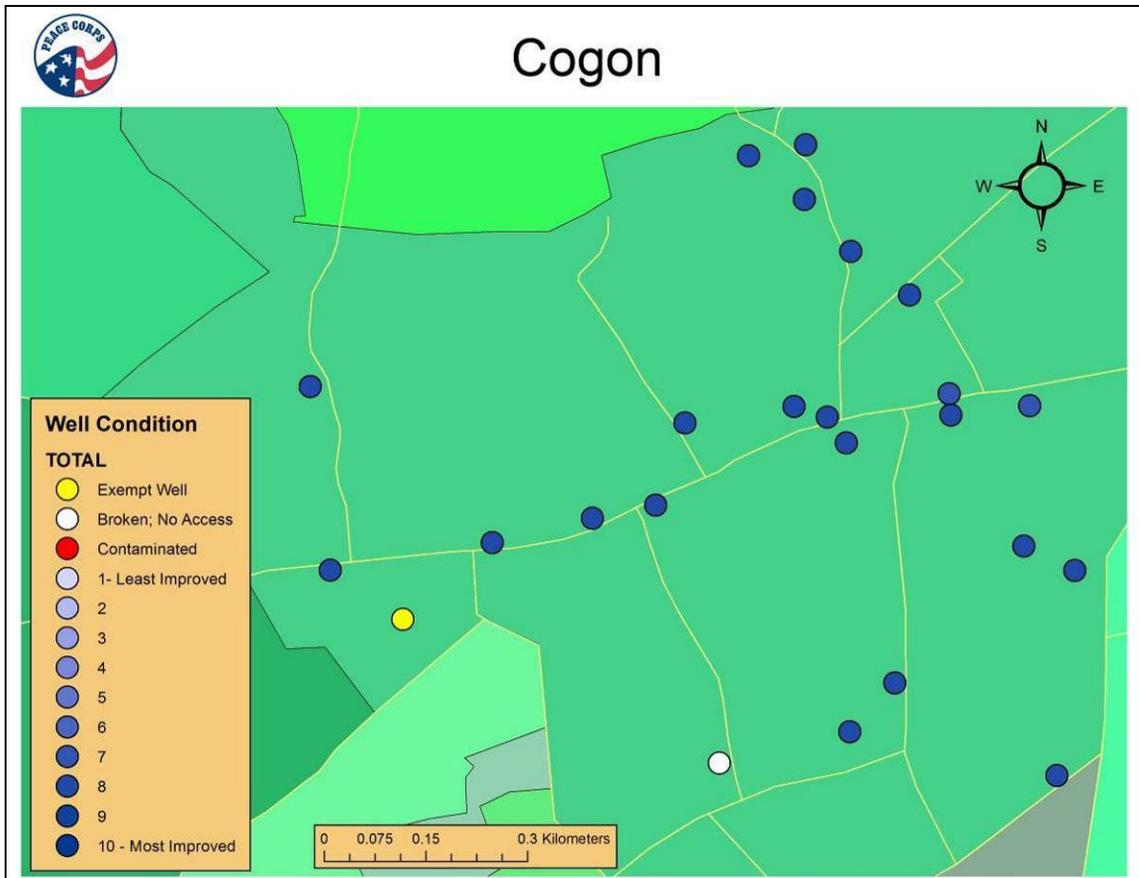
Number of Wells Sampled: 60

Average Improvement Score: 7.2

Issues: High density development along makes well source protection very important.

Priorities: Improve aprons and covers of wells.

Cantahay is located inland on the Peninsula and contains the Airport. Its main development is along the abandoned tarmac of the former US Navy facility and contains the transition area from the elevated karst to the wetlands to the south. Having extensive impervious surfaces, it benefits directly from the recharge areas further north. Wells are generally improved. Two natural water sources (Well-10 & Well-11), very important in the days following Yolanda, are identified as needing special preservation. The area is served by the MWS at the western end along the provincial road and along the Navy Road to the North. Cantahay is home to three high capacity supply pumps that feed the large tanks located in the highlands. The barangay has a dedicated BWS (Well-60) serving the residents along the less densely populated northern road.



Number of Wells Sampled: 22

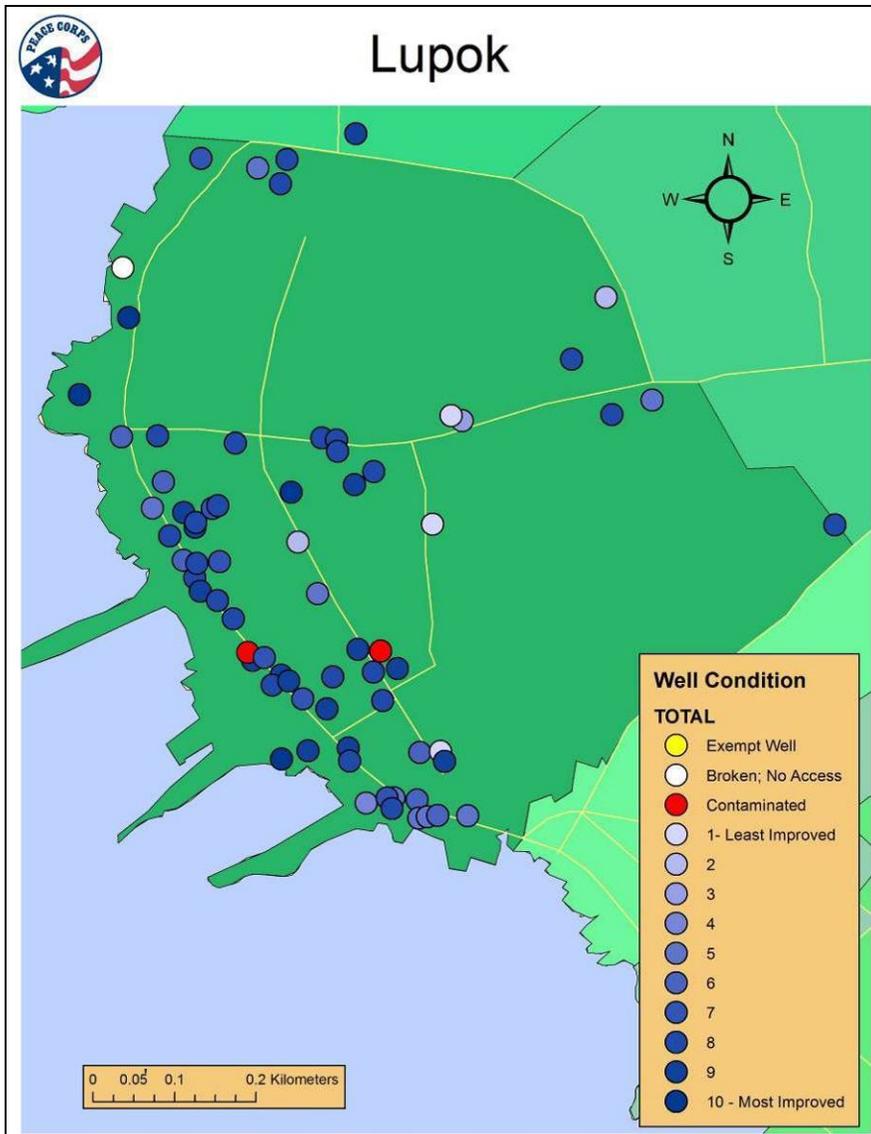
Average Improvement Score: 7.9

Issues: Minor issues only. Drainage around wells inadequate.

Priorities: Improve aprons around high use wells. Improve drainage and apron around Well-21.

Cogon is an inland peninsular barangay located along the Navy Road. The wells in Cogon are consistently good. Other than the Legacy Well-21 proposed for exempt special preservation status. No open or unsecured water sources were observed in Cogon. Located along a major recharge area, identified by the surveyor as a possible collapsed cave, the water is readily available. Well-11 is a new Jetmatic application and does not produce water. The owner speculates that the depth to the water exceeds the maximum effective range of a suction type pump. Cogon is the location of a newly opened settlement of families affected by Yolanda. A well is located at each end of the settlement and a dedicated water system is scheduled to go on line soon.

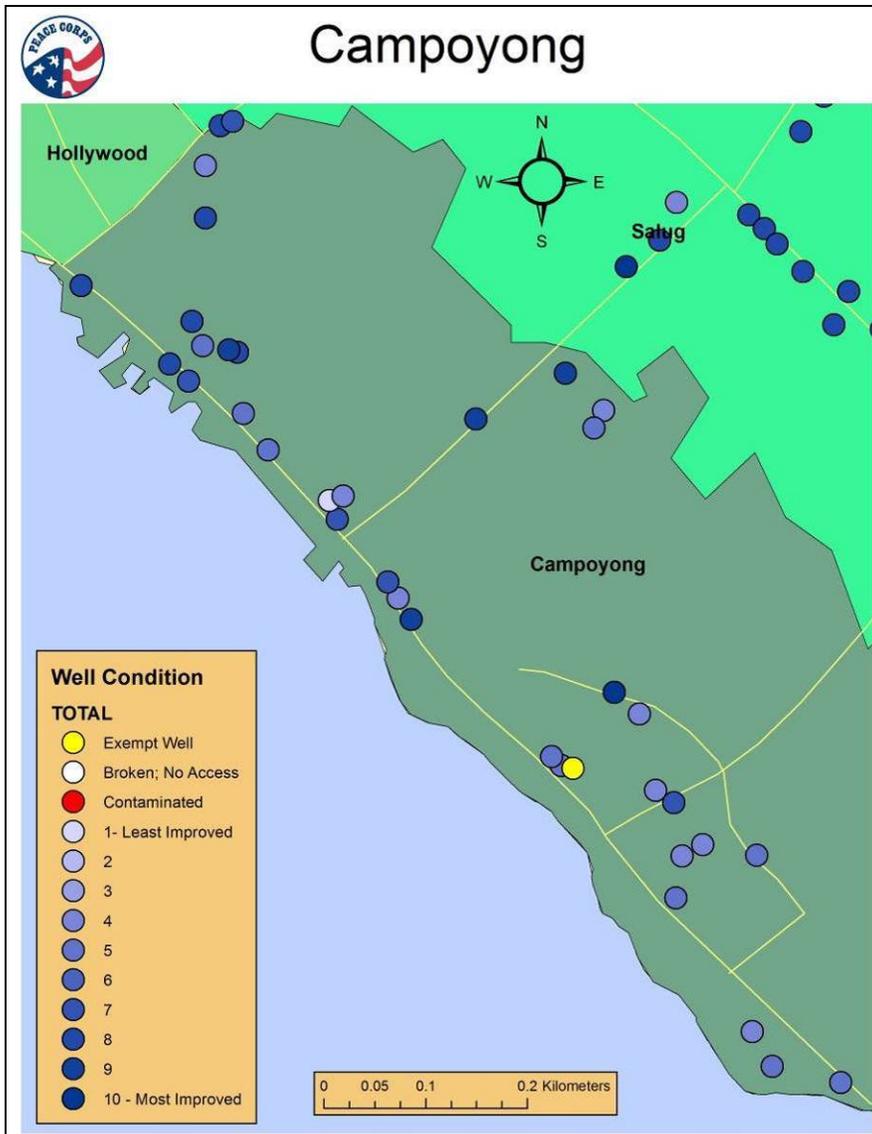
The BWS (solar) was destroyed by Yolanda and has not been replaced. The MWS serves the Barangay along the National Road.



Number of Wells Sampled: 70
 Average Improvement Score: 6.8
 Issues: Contaminated and Uncovered wells.
 Priorities:

Lupok is home to multi-storied hotels, restaurants, and the port. It has a lot of improved wells, that lifts its overall score, however the number of unimproved wells and poorly secured wells is more than the surveyor expected. Compared to its neighbor Cogon, Lupok is a mess in terms of wells. The surveyor suspects that having extensive coverage of the MWS and easy access to the water table, as is the case in Lupok, does not necessarily lead to improved water sources, but contributes to neglect of open wells.

There is a contaminated well along the main road that is evidently a remaining cleanup task from the Typhoon (Well-34). What appears to be a contaminated well (Well-15) near the elementary school may be a overgrown planter box. The surveyor may be erroneous in counting this as a well. Lupok has one of the best designed wells (Well-20) the surveyor has found on the survey trail.



Number of Wells Sampled: 36

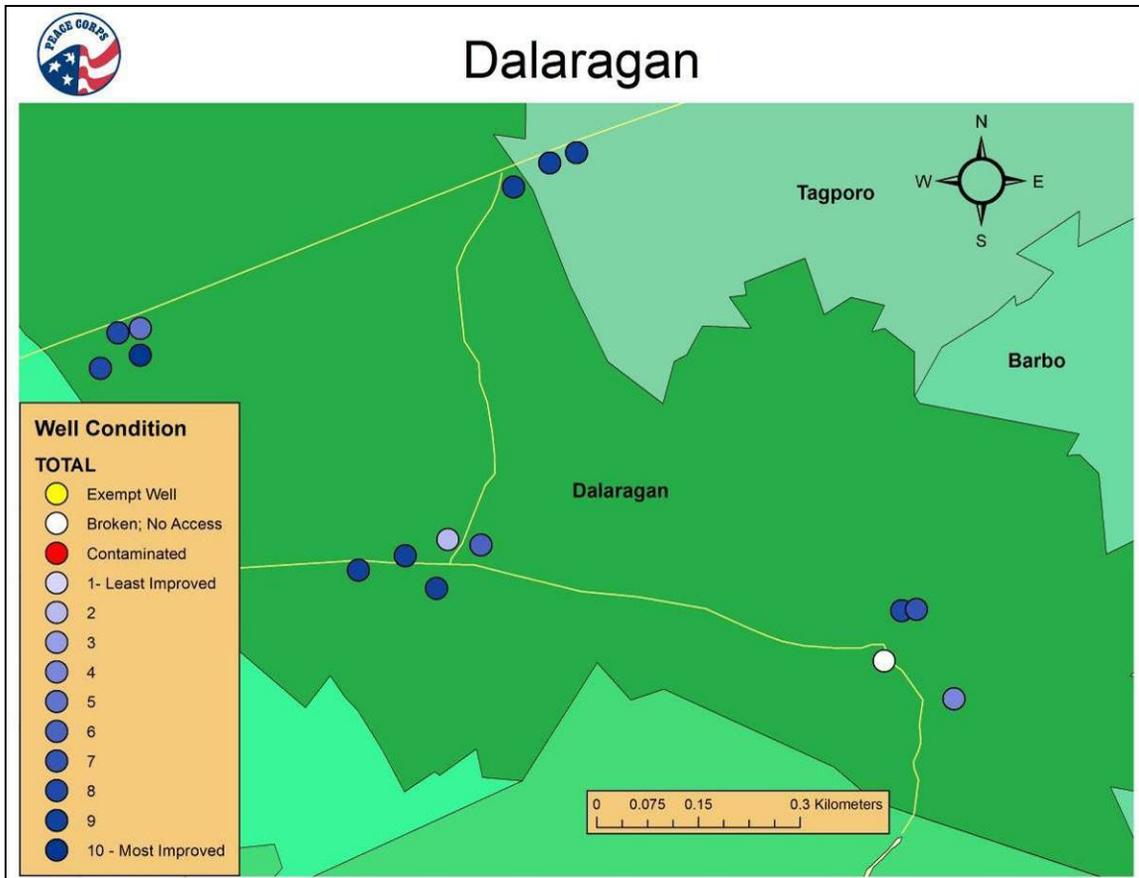
Average Improvement Score: 6.0

Issues: Large number of damaged, or deteriorating wells.

Priorities: Implement Continuous Improvement.

Campoyong is located adjacent to the downtown area and transitions from a rural fishing village to dense populated affluent residential streets along the southwest coast of the Peninsula. Consequently the wells are better taken care of as the surveyor goes from south to north. Well-11 is a possible candidate for preservation as is.

Among the wells in Campoyong, are two wells that apparently have been properly closed and decommissioned; something not found elsewhere along the survey trail in Guian.



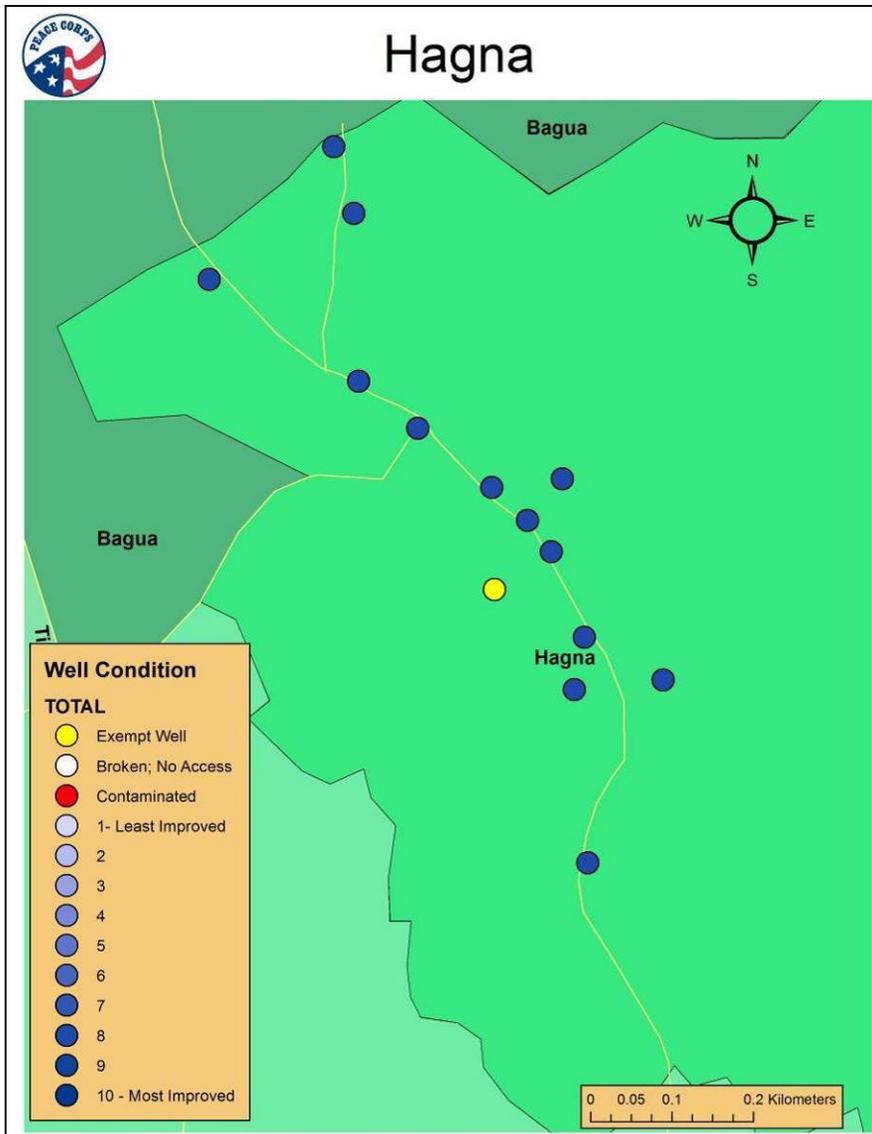
Number of Wells Sampled: 12

Average Improvement Score: 7.1

Issues: no major issues.

Priorities: Maintain Continuous Improvement

Dalaragan consists of three areas of residences that occupy the high spots of an extensive wetland area in the south of the main peninsula. The barangay has a recovered BWS located in the middle groups of residences and extends along the road to the lower main barangay area. The surveyor did not note any problems and water is available in most places at a pump or faucet. The upper group of residences contains one of the best-designed covers of wells found along the survey trail: Well-13.



Number of Wells Sampled: 13

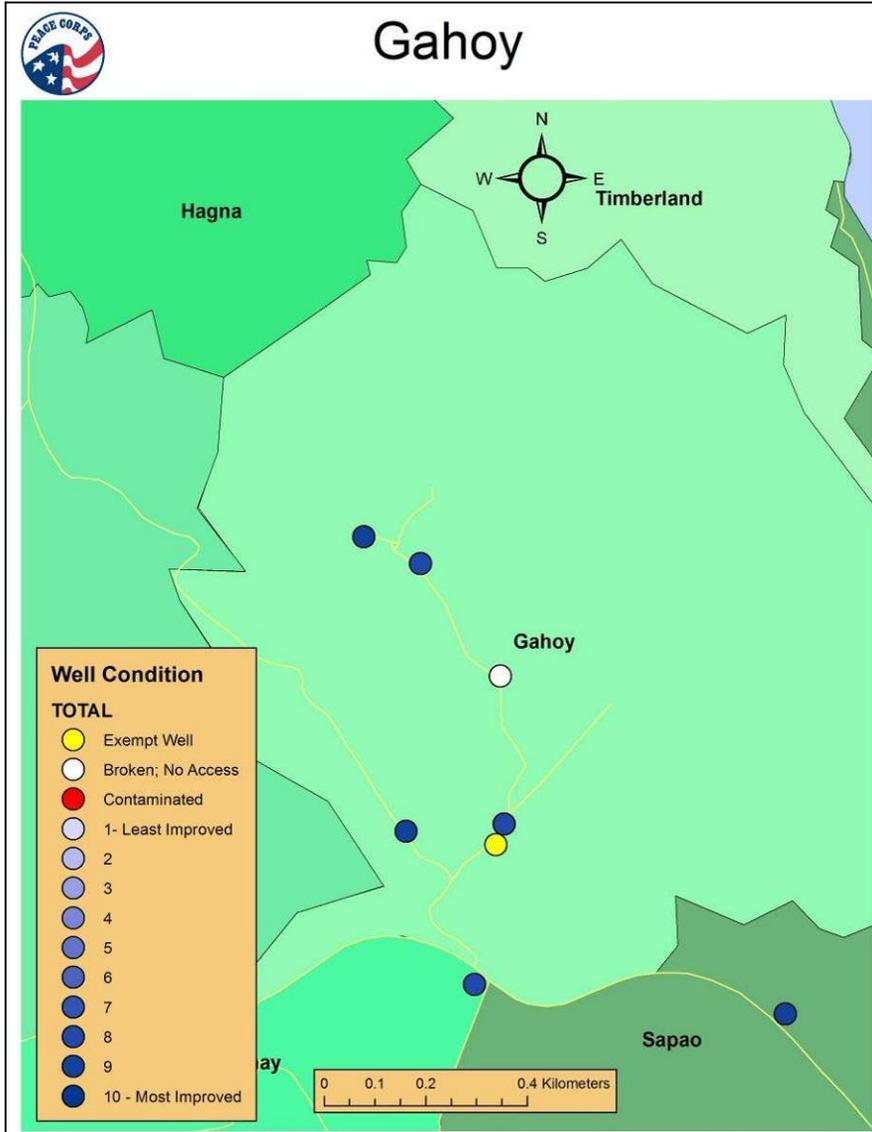
Average Improvement Score: 8.0

Issues: Minor improvements to well drainage.

Priorities: Remove papaya trees from Old Well-07.

Hagna is located inland on the peninsula adjacent to the Pacific Ridge. The wells in Hagna are consistently good. The only open well is the well designated for preservation in its present condition. As you go south from the north part of Hagna the elevation drops into a large sink area. The wells in the higher elevations, newer wells provided by Operation Blessing, are of the downhole type. As you go down, the wells transition to the suction type. Well-5 & Well-13 are old artesian installations that have been retrofitted with Jetmatics.

Old Well-07 is magnificent. With all the other wells safe and secure in Hagna, this well has a prominent place as a contingent source of water.



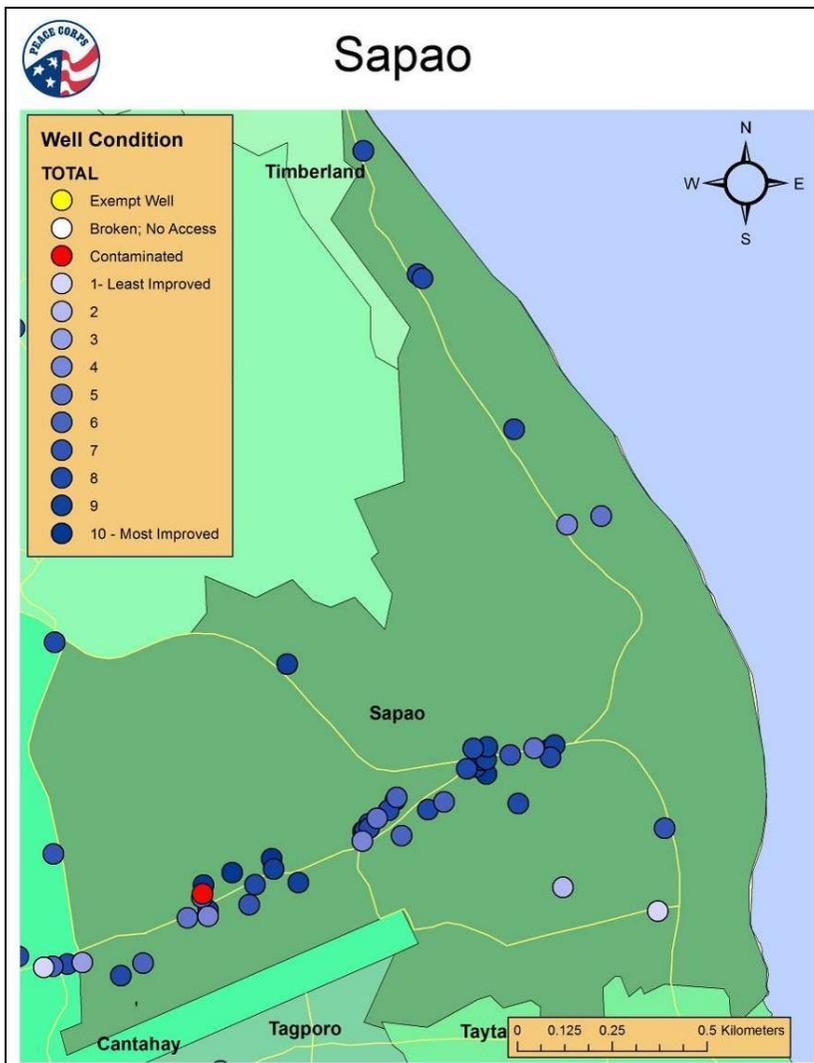
Number of Wells Sampled: 4

Average Improvement Score: 8.5

Issues: Development of sources.

Priorities: none major

Gahoy is served by the MWS so locally supplied water less of an issue. Well-01, is suggested for preservation, however, it still needs to be improved to prevent contamination of the water table. It is located at the end of a major recharge area and protections such as well drained usage areas and other impervious surfaces need to be installed. The private well with the motor on top is inaccessible in its current configuration. Perhaps the property owner can be encouraged to reconfigure the motor and piping to provide for contingent uses in addition to provide for serviceability.



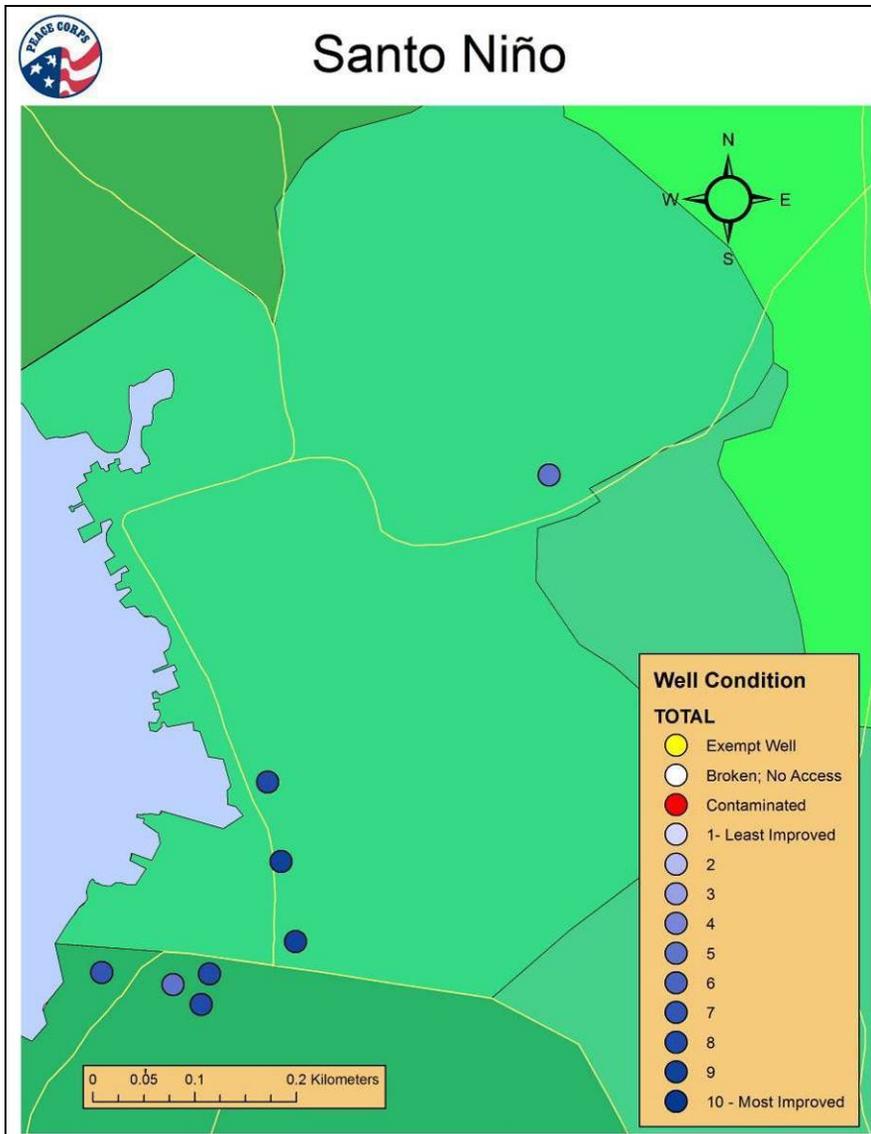
Number of Wells Sampled: 51

Average Improvement Score: 7.1

Issues: Dirty and Uncovered Wells, mis-placed graveyard

Priorities: Clean and secure wells community water sources. Well-50 on the road to Taytay serves 7 families and is in disrepair.

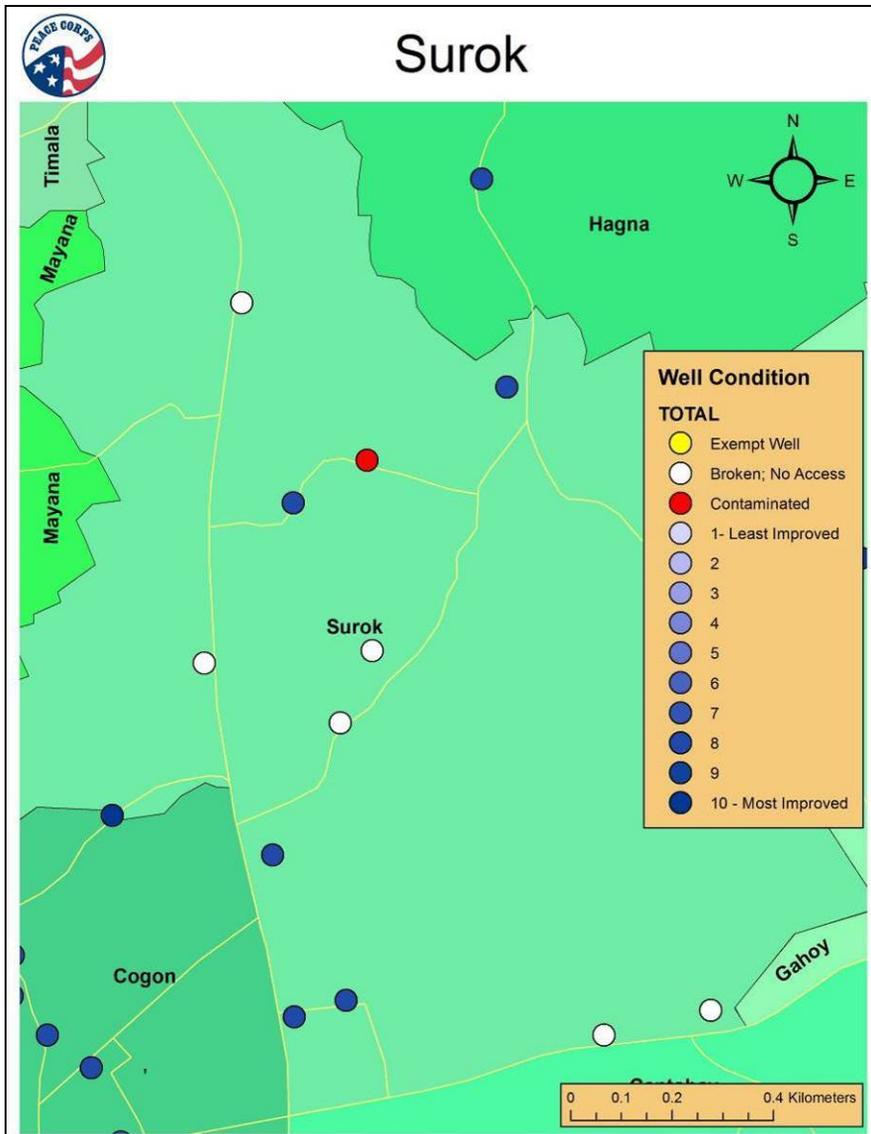
Sapao also has a narrow strip of land that borders the Pacific and is a showcase for the spectacular cliffs of the Pacific Ridge and Timberland. Waterflow and wells are scarce there as is the population. Denser populated areas of Sapao, like Cantahay, also occupy the impervious surfaces associated with the old airfield. Sapao also has extensive sand mining activities near the end of the runway. The large amount of sand may have been imported by the US Navy as an "arrestor" material in the case airplanes overshoot the runway. This convergence of resources supports numerous concrete block operations. The surveyor found Blacksmithing in Sapao. There is an "un-sanctioned" and poorly maintained graveyard at the eastern tip of the runway. Well-12 has been converted to a garbage receptacle. Well-20 has been designated as a drinking water well. A healthy but localized patch of heavily forested highland protects it. Many wells in Sapao are of exemplary design. Some are undeveloped, un-maintained. The MWS serves many residents in Sapao.



Number of Wells Sampled: 4
 Average Improvement Score: 7.7
 Issues: Land Fill Security
 Priorities: None Major

Santo Nino is located on the west coast of the peninsula and is extensively served by the MWS. Three wells are located near the coast and improved. Some are on private property and some associated with the now destroyed BWS. The open well in the sink area occupied by the Municipal Landfill is the only water source used by the community that is threatened. Santo Nino also has a substantial amount of water flow coming out of the highlands to the east and also drains the landfill area. The open well is significant due to the fact that it will be the first place that any contamination from leachate coming from the landfill will be detected.

Santo Nino is also home to a major Bureau of Fisheries Projects. Abalone and other valuable species are grown there for the international market.



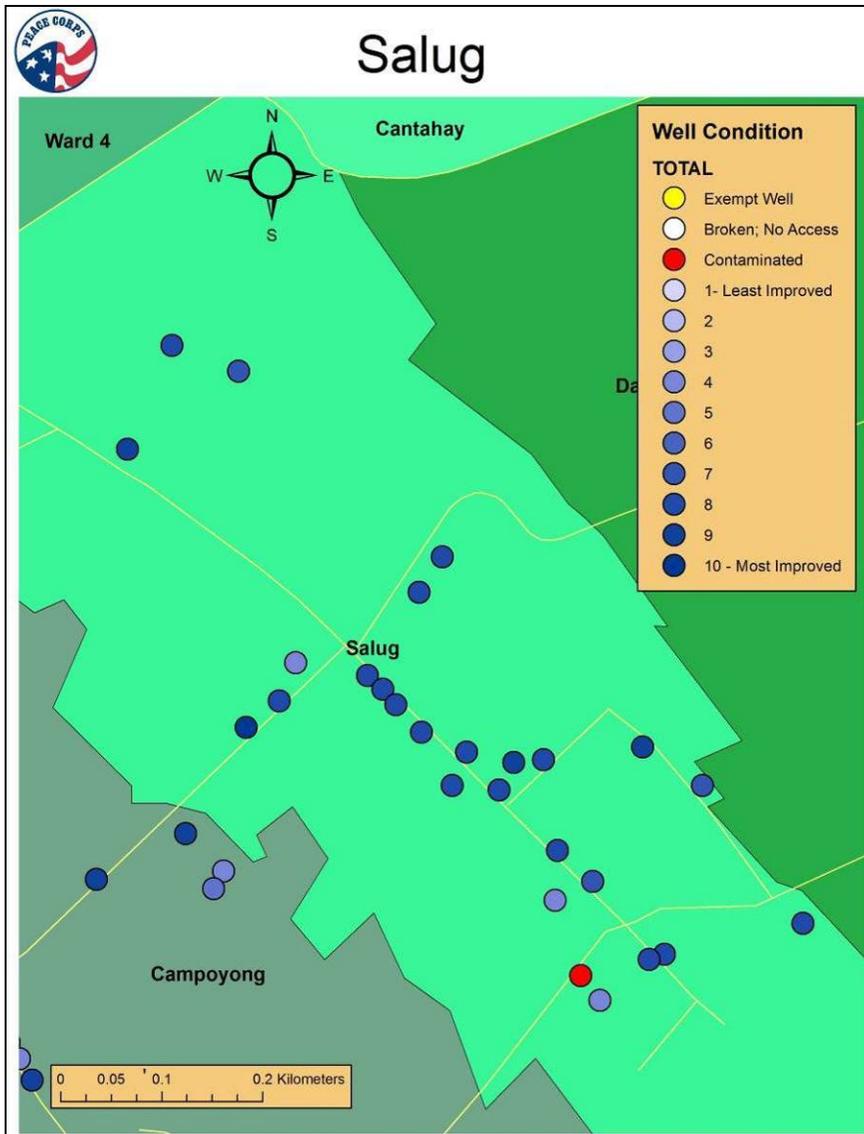
Number of Wells Sampled: 7

Average Improvement Score: 7.1

Issues: High number of out of service wells; contaminated well.

Priorities: Implement Continuous Improvement and recover wells.

Surok has the one of the finest examples of a well that has benefited from continuous improvement: Well-6. A large area with relatively few wells, Surok also has the distinction of having more "artesian" wells that have fallen out of service. These monuments to maintenance failure dot the landscape. A small disused and contaminated well, Well-09, is located in a major recharge area. Surok is home to one of the main pumping stations supplying the water to the tanks in Cantahay and is served by the MWS along the National Road, the lower parts of the road to Hagna, and the Navy Road.



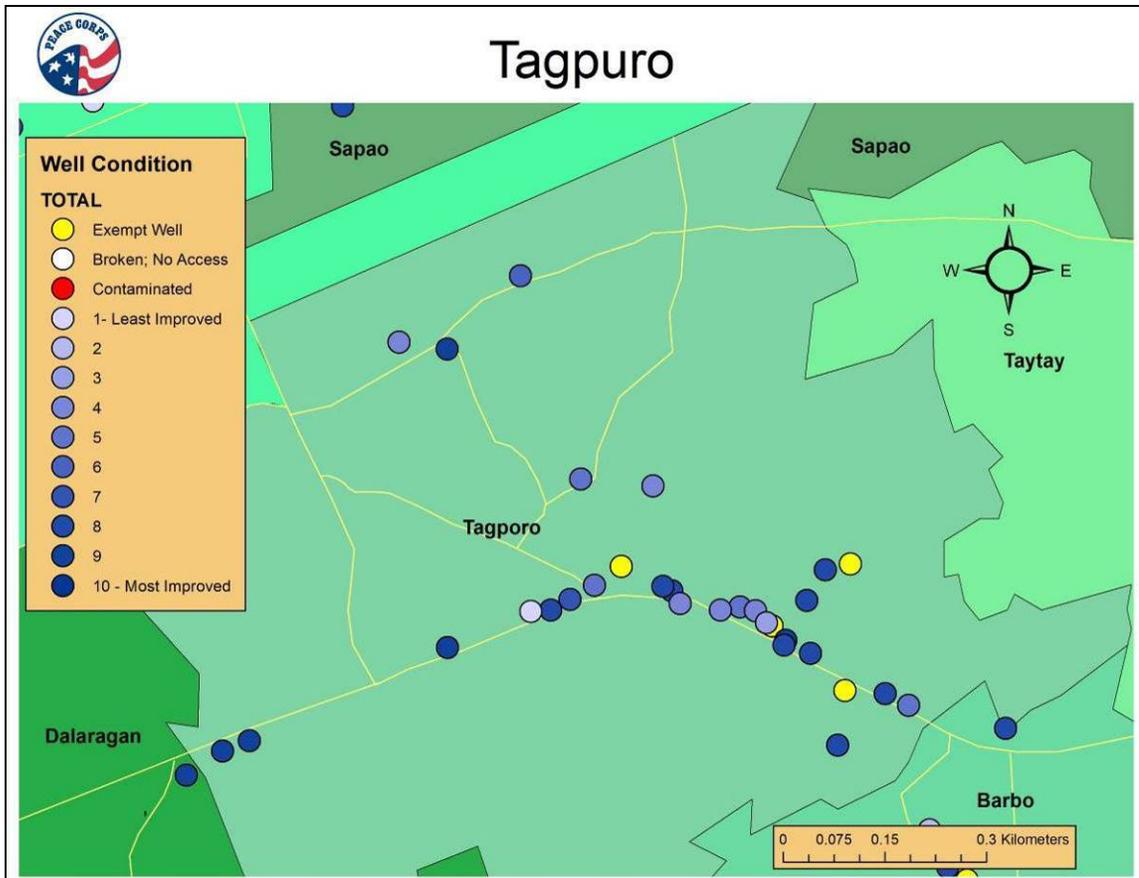
Number of Wells Sampled: 27

Average Improvement Score: 7.3

Issues: no major issues; a contaminated well.

Priorities: Continue with well improvements

Salug has the largest number of superior designed wells in its common areas. It is evident that there is a strong program of well improvement already in place. Near the pair of superior wells next to the Plaza is a large contaminated well. Salug is served by the MWS.



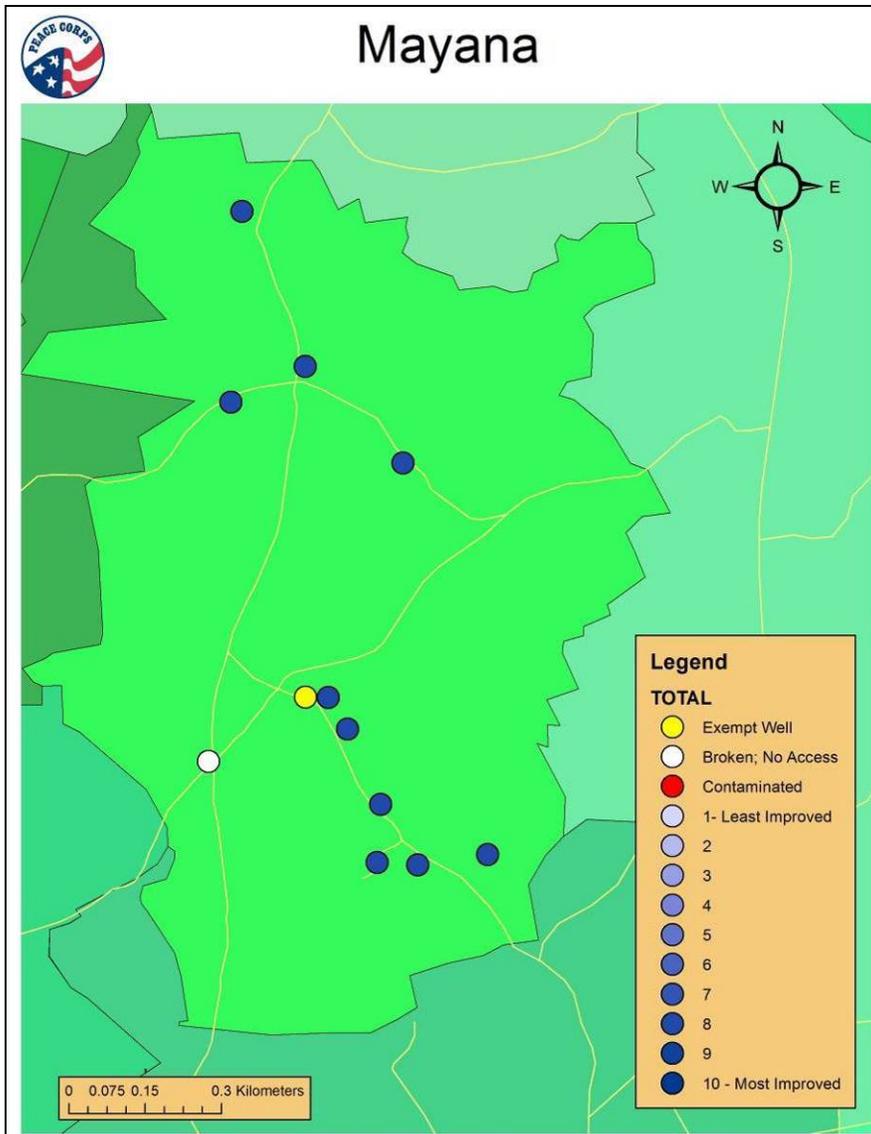
Number of Wells Sampled: 28

Average Improvement Score: 6.5

Issues: None specific

Priorities: Continuing improvement of existing sources

Tagpuro is located on the peninsula below the airport. It is served by a recovered BWS. As with most BWS water supplies, it is only available for a few hours in the morning. The surveyor suggests four wells for preservation mainly due to the natural locations or construction materials. Some relocated storm affected families are relocating in areas adjacent to the airport. In addition to the help the families are receiving in constructing their new homes, in some cases they need help in developing their water resources. While the neighboring barangays have access to the MWS, the surveyor found no connections in Tagpuro.



Number of Wells Sampled: 10

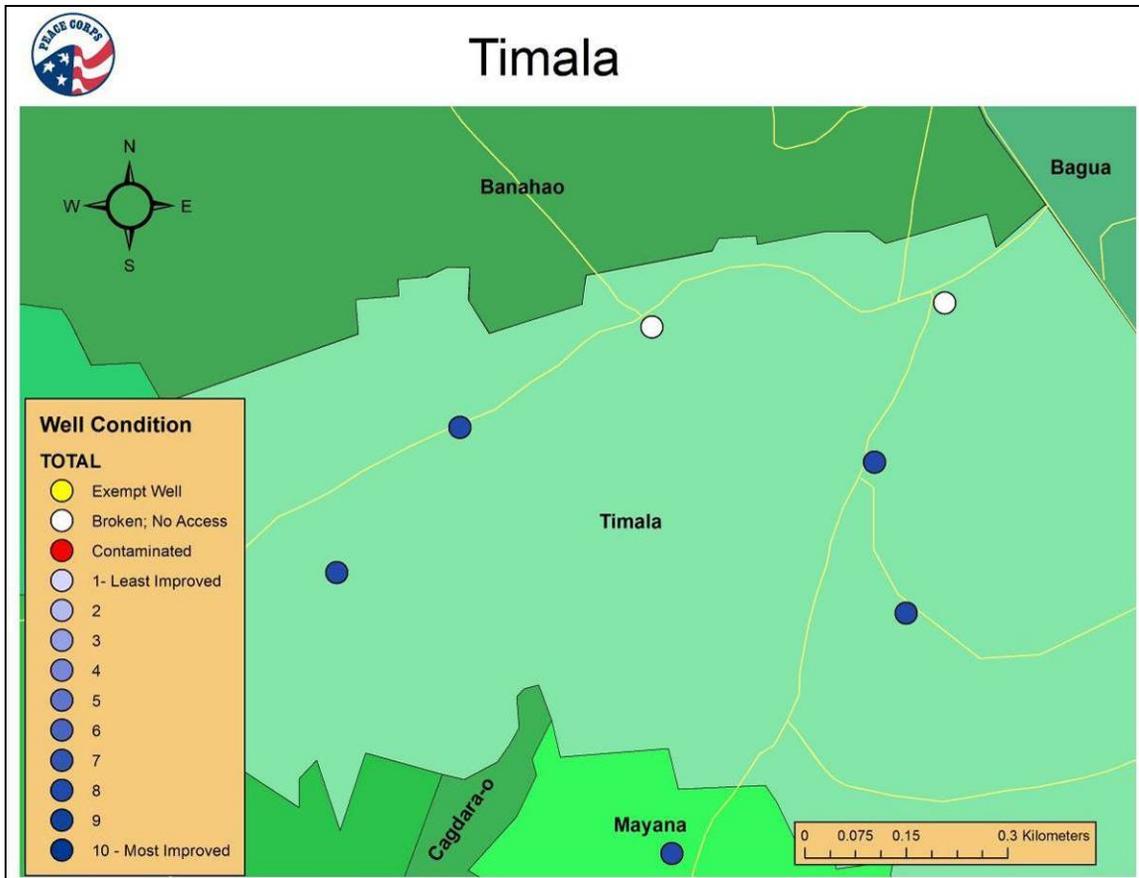
Average Improvement Score: 8

Issues: none Major

Priorities: Continue development of Sources

Mayana, like most barangays at higher elevations with limited access to the water table and fewer sources, has excellent wells. Most are of the "artesian" type. One complaint often heard about these wells, is the amount of work it takes to push the water to the surface along with the fact that it takes more pumping for the water to run clear. This may be due to oxidation of piping and linkages.

There is one open well that the surveyor proposes for preservation. It is the deepest open well in Guian. Situated beneath a large and tall tree, it dominates the landscape.



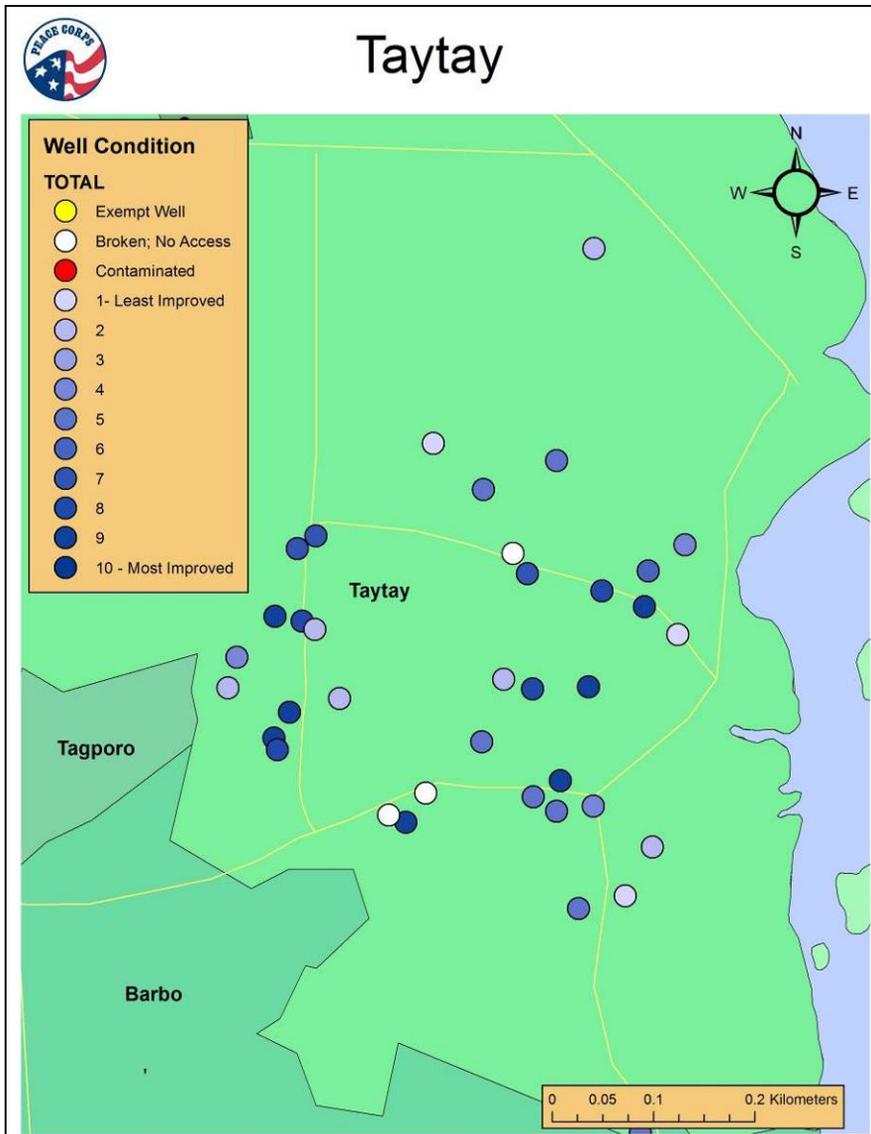
Number of Wells Sampled: 4

Average Improvement Score: 8

Issues: Few wells, un-repaired wells

Priorities: Return to service "artesian" wells that are broken

Timala is an inland barangay found at the higher elevations. It boasts a cave locally famous for its access to the water table. Technically this cave is a contingent source of water but is not included in the survey. The high elevation makes residents dependant on downhole positive displacement pumps to bring the water to the surface. Two of the six wells being off-line is significant. The BWS has been restored with a new tank on the damaged "solar" tower. It was not determined if the MWS extends to the National Road border of Timala. At the Timala - Mayana Border is located also has a MWS tank that is currently off line.

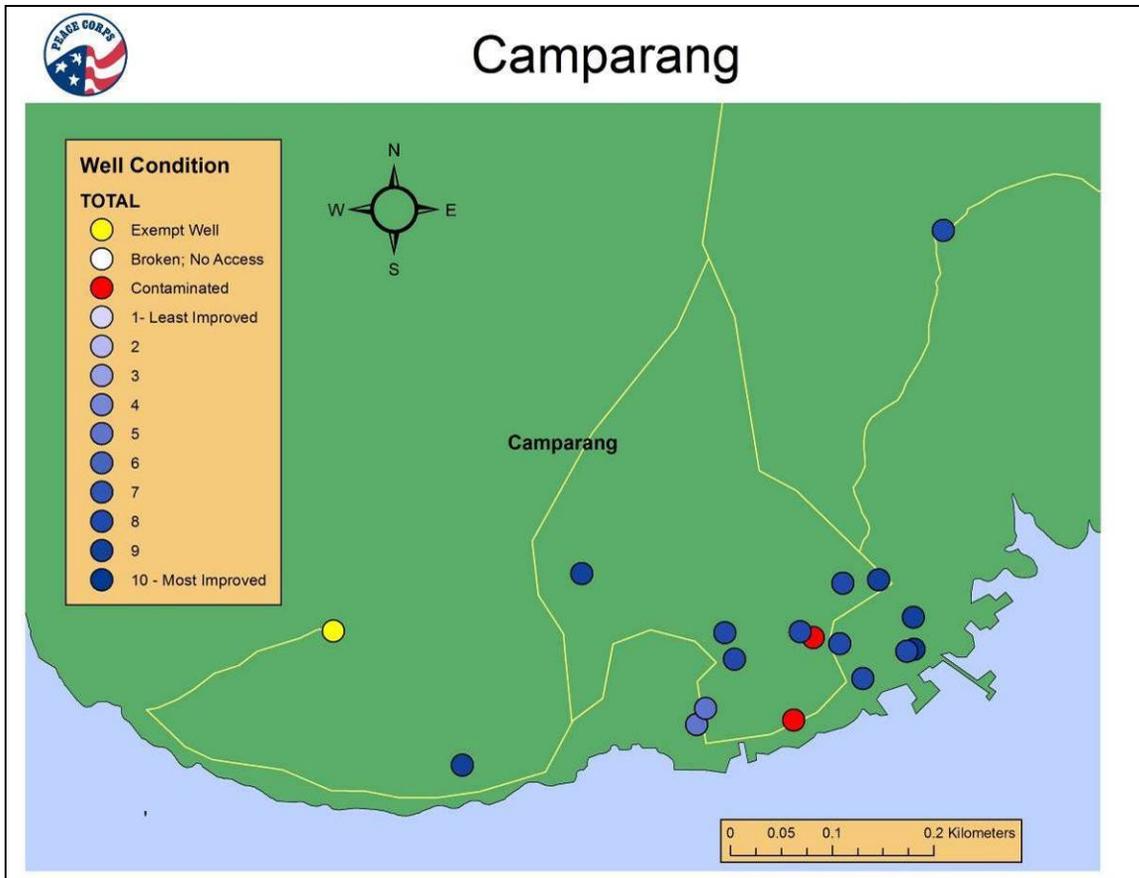


Number of Wells Sampled: 32
 Average Improvement Score: 5.6
 Issues: None Specific

Priorities: Continuous Improvement; Well-35 appears neglected and without a steward.

Taytay is a peninsular barangay on the southeast coast. Its wells tend to be unimproved with two wells that are at risk becoming contaminated. Well-2 and Well-35 should be secured as a priority.

Taytay is without a BWS but is served throughout by the MWS.



Number of Wells Sampled: 18

Average Improvement Score: 6.5

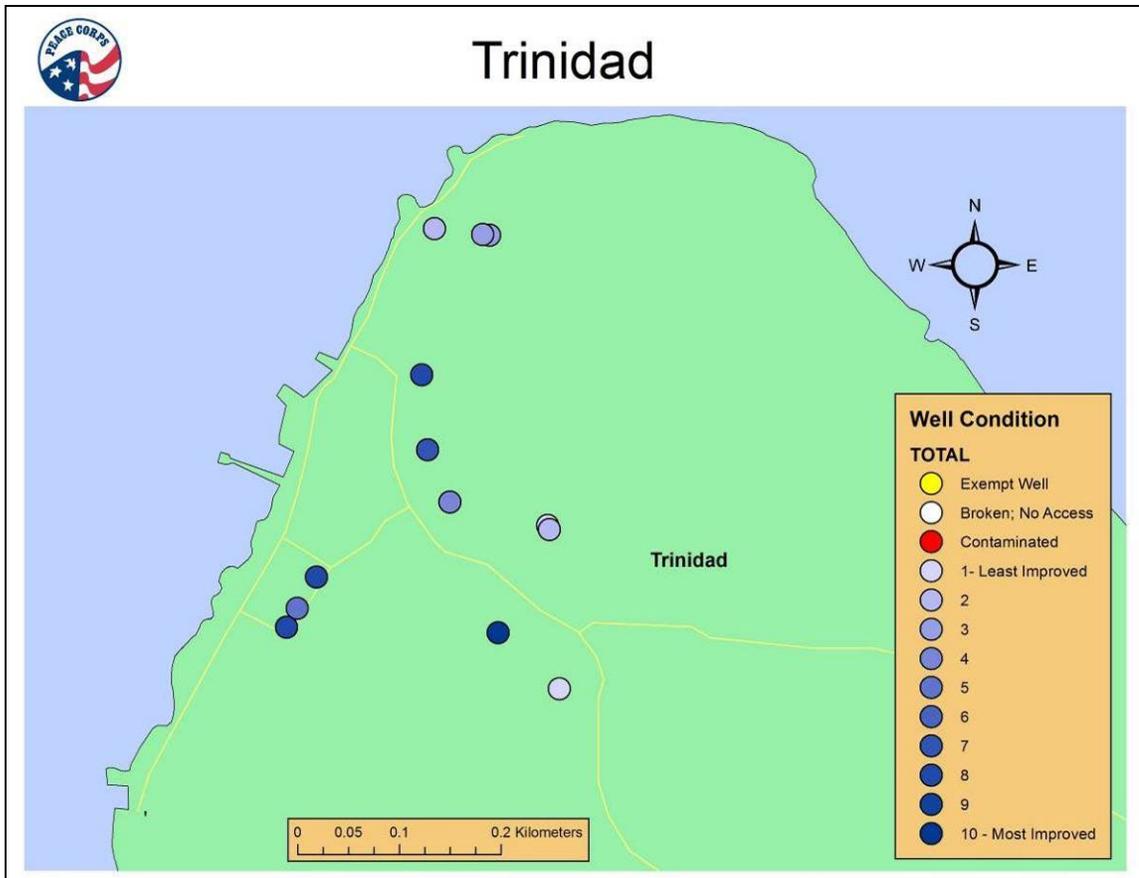
Issues: BWS not on-line

Priorities: Clean and cover wells, Bring BWS online.

Camparang is found on the southern coast of Tubabao Island and is blessed with a spring and drinking water well. It is also the site of one of the Japanese philanthropic and development projects. Their maritime association helped rebuild their school and underwater storm resistant fish cages for lapu-lapu (grouper) culture is being developed.

The BWS of Camparang survived the storm relatively intact, but is not yet on line. Camparang also has the distinction of being a barangay where there were no observance of broken faucets among the BWS standpipes.

Wells are fair with two contaminated wells reducing the overall score. One is storm damaged. The other belongs to an elderly couple who seem not to have help maintaining their well.



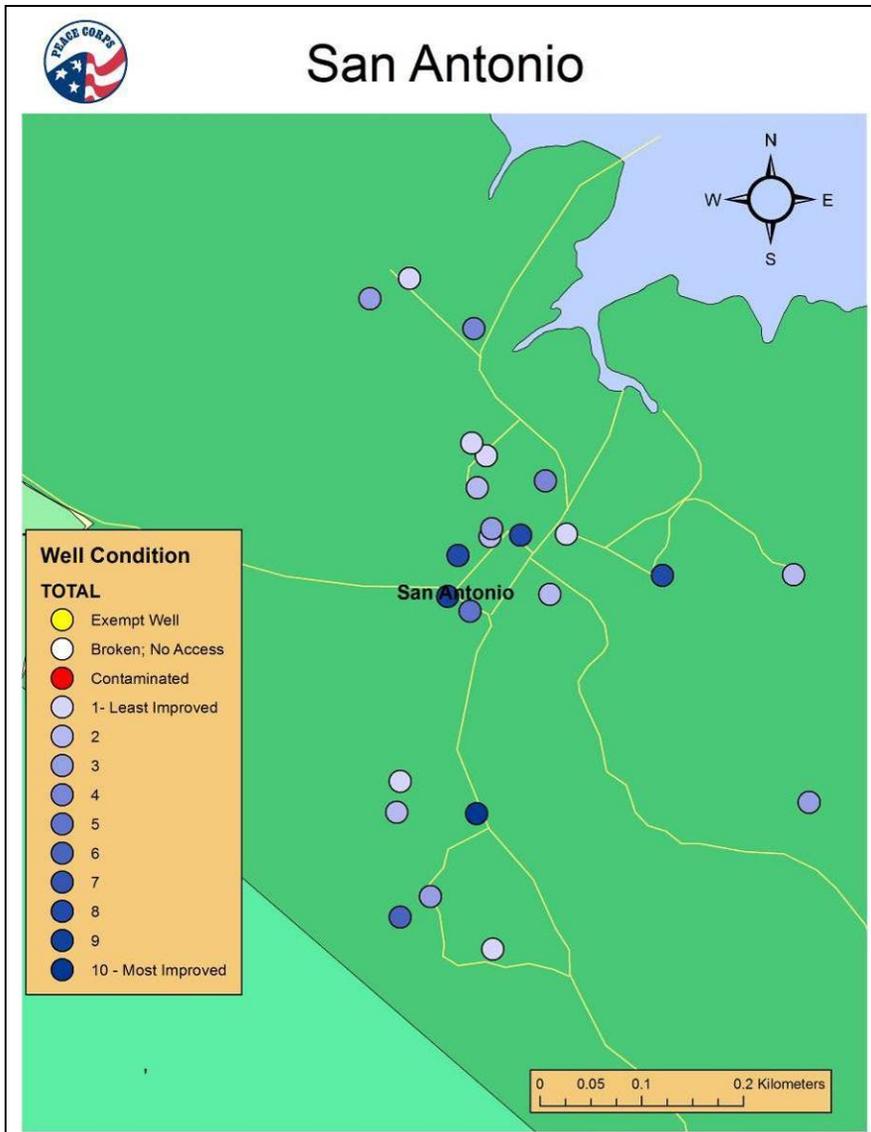
Number of Wells Sampled: 13

Average Improvement Score: 4.8

Issues: Uncovered and unimproved wells.

Priorities: Continuous improvement; cover wells.

Trinidad residents occupy land very near the water table. Their inland wells have multiple jetmatic connections that run some distance to the coastal residents. One of these are a significant source, that once had an improved cover, however it is in a current state of disrepair. Trinidad has a stand-alone BWS that was recently installed. Primarily funded by the Japanese, it has a three stage filter that includes a softener stage.



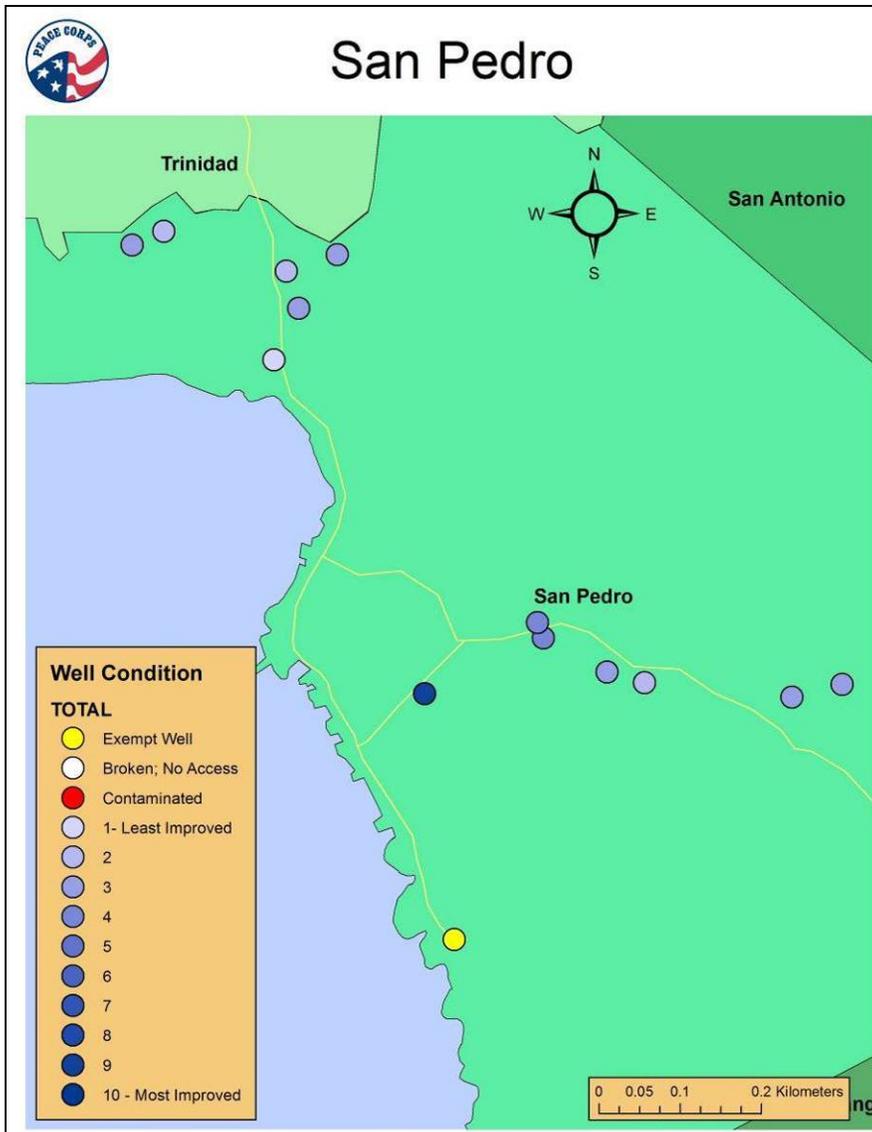
Number of Wells Sampled: 24

Average Improvement Score: 3.8

Issues: Unimproved wells.

Priorities: Implement improvement plan.

San Antonio water table is less than a meter below grade. There are a lot of unimproved wells. One well (Well-6) in San Antonio is a result of Yolanda. When the storm came through, a large tree was up rooted and the resulting hole is being exploited as a well by one elderly gentleman. Their BWS is a stand-alone system at the plaza.



Number of Wells Sampled: 13
 Average Improvement Score: 3.2
 Issues: Unimproved wells.
 Priorities: Implement improvement plan.

San Pedro is home to one of the Yolanda surviving "Solar" tanks. It is also served by piped BWS water throughout the populated areas. It has a very nice traditional well (Well-6) that can accommodate a large laundry day crowd as well as young bathers. The large heavy cover is replaced at night. At the other end of the Coastal Road is a old well in a natural setting that is nominated for preservation (Well-7).

With the water needs of the barangay appearing to be well taken care of, the low score is due to the large number of unimproved wells may be misleading, however a little improvement in these wells will go a long way to improve the water quality of outlying areas.

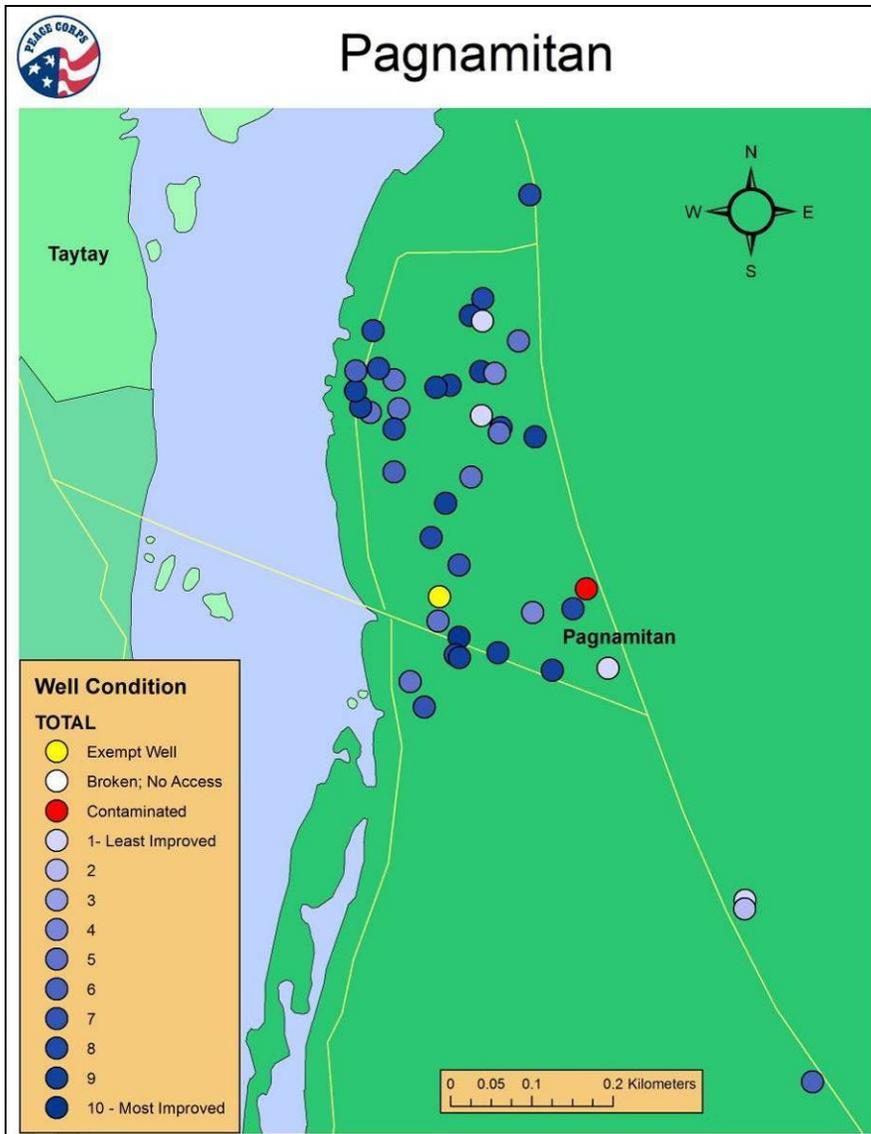
Also, the BWS extends to a remote group of residences to the south that was not surveyed.



Number of Wells Sampled: 42
 Average Improvement Score: 6.3
 Issues: Lack of water at higher elevations.
 Priorities: General Improvement Plan.

San Juan water sources are found at the lower elevations as dug wells and along the hill sides as creeks and captured springs. Previously the BWS was located at a higher elevation and served the residents that occupied the ridge tops and along the main road going up to the central highland. With that system destroyed by Yolanda, the residents need to haul their water up hill some distance.

San Juan has a drinking water well (Well-4) that has a tap stand facility for the residents. One well slated for preservation, Well-1 is actually a series of spring capture structures. The top is used for drinking and the lower is used for washing. The other spring proposed for preservation is Well-13. This spring is unimproved. Basically springs and creeks do not fit readily into the model proposed by this report, however they can, and often are improved as a water source. Each community should decide on a case-by-case basis how to proceed. Another creek, on the border of Camparang and San Juan was not included in the scoring for the same reason. It is an important water resource with extensive improvements and should be protected or preserved as appropriate.



Number of Wells Sampled: 42

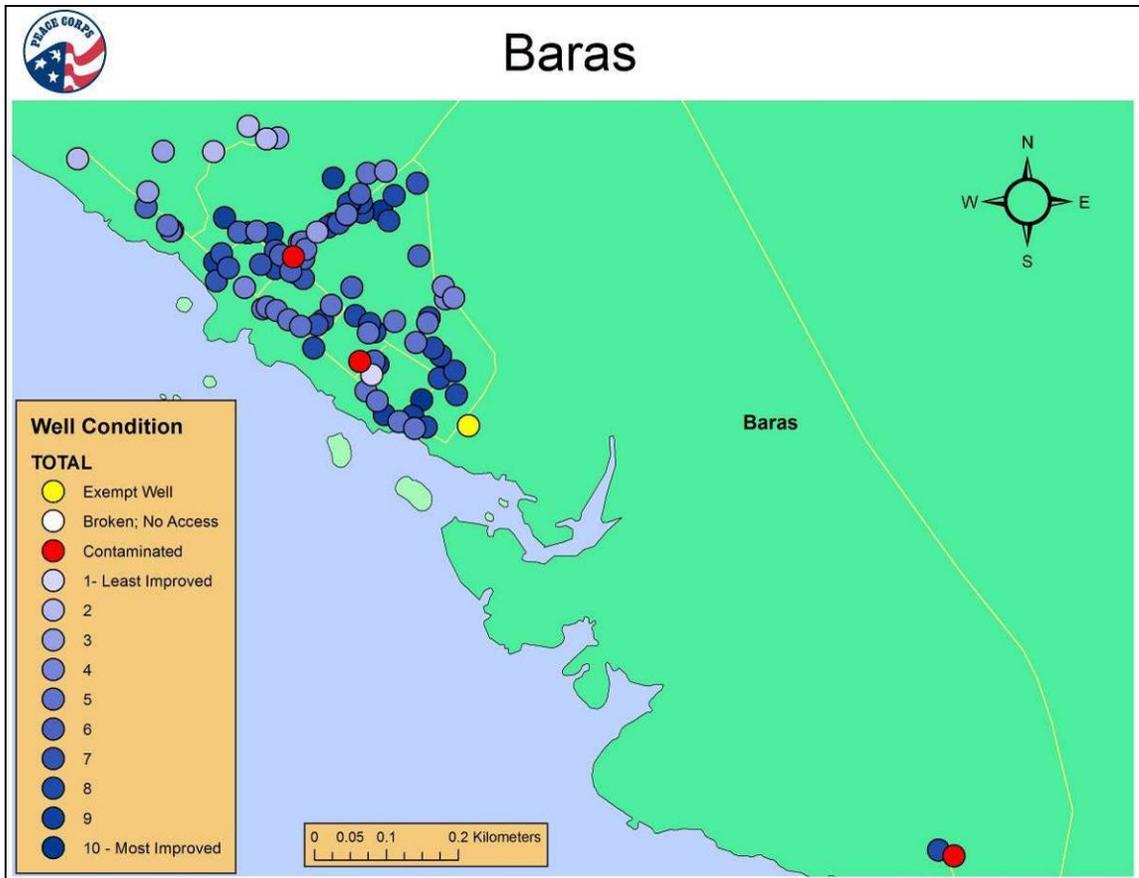
Average Improvement Score: 6.3

Issues: none major. One abandoned well.

Priorities: General Improvement Plan.

Pagnamitan is the northern tip of Calicoan Island. The BWS was destroyed by Yolanda and has yet to be replaced. Pagnamitan is served by the MWS along its main avenues. The abandoned (contaminated) well follows the common pattern of filling with trash, and then being taken over by plants.

Some of the low scoring wells are new constructions.



Number of Wells Sampled: 94

Average Improvement Score: 6.1

Issues: none specific; contaminated unsecured wells

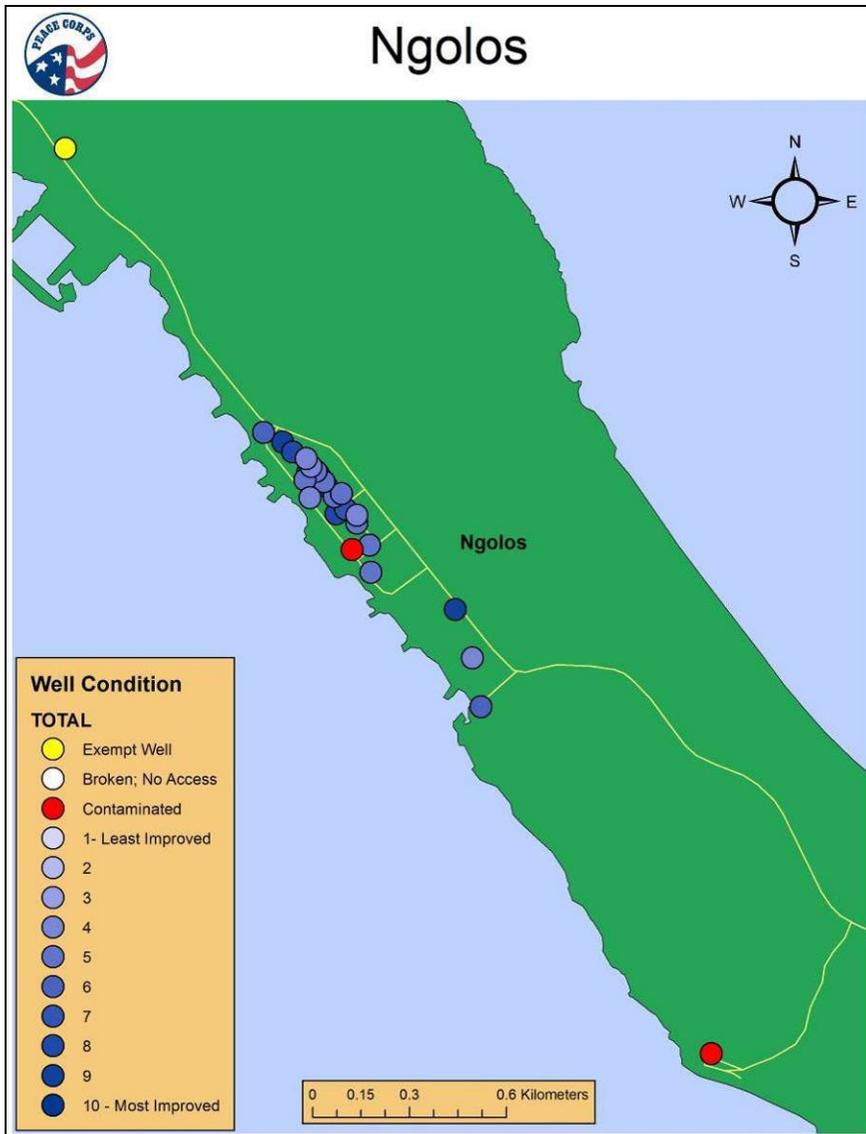
Priorities: General Improvement Plan.

In Baras, the surveyor counted over 90 wells, more than any other barangay. The actual total number may be much higher. High water table, easy matrix to excavate may be factors contributing to almost every house having a well.

Overall the well score is low. Covers were not common. With so many wells, this simple improvement will go for to secure the aquifer for. There are three wells that are abandoned and contaminated: Well-24, home left abandoned after Yolanda; Well-78, well at plaza converted to debris container; Well-91, see description in body of report above.

Well-42 and Well-43 have been "improved" with old motorcycle tires. This practice was observed in a couple of other barangays. The problem with old tires stacked one upon another to form a well shaft is that it forms a breeding habitat for mosquitoes. As water is drawn up with a bucket, water will slosh to the side filling the tire with stagnant water that will attract insects and other animals looking for a nook or cranny to occupy. It is better to leave a dug well with its natural matrix walls than to apply old tires.

The well the surveyor nominates for preservation is Well-1. Able to accommodate many washers at a time, it is a community treasure worthy of preservation.

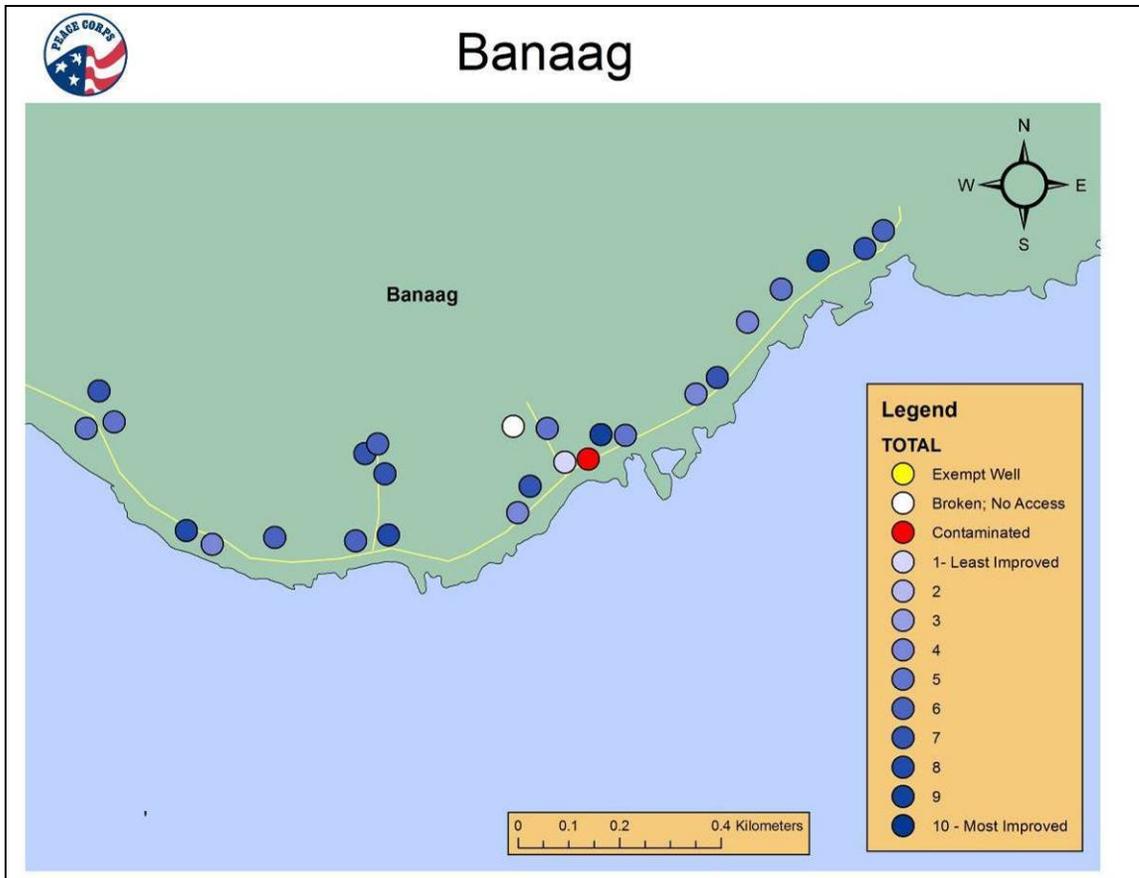


Number of Wells Sampled: 26
 Average Improvement Score: 5.5

Issues:

Priorities:

Ngolos is the next barangay on Calicoan Island going south. It is also served by the MWS. There were no wells in Ngolos surveyed that were in an unimproved state. Most wells were with improved shafts, but without covers. Most improvement therefore will be simply securing the source with a cover and improving aprons. Two contaminated wells were noted. One supplied the pump near the elementary school Well-25. Well-1 is in a small fishing village to the south of the main population center. The residents noted that the well was salty and was not used because of the MWS supply taps, five in all. It appears that the residents attempted to close the well with stones and it hasn't gathered much trash. A little clean up with a non-removable secure cover will finish the job. The Barangay is installing a buffer tank positioned on a hill.



Number of Wells Sampled: 25

Average Improvement Score: 5.7

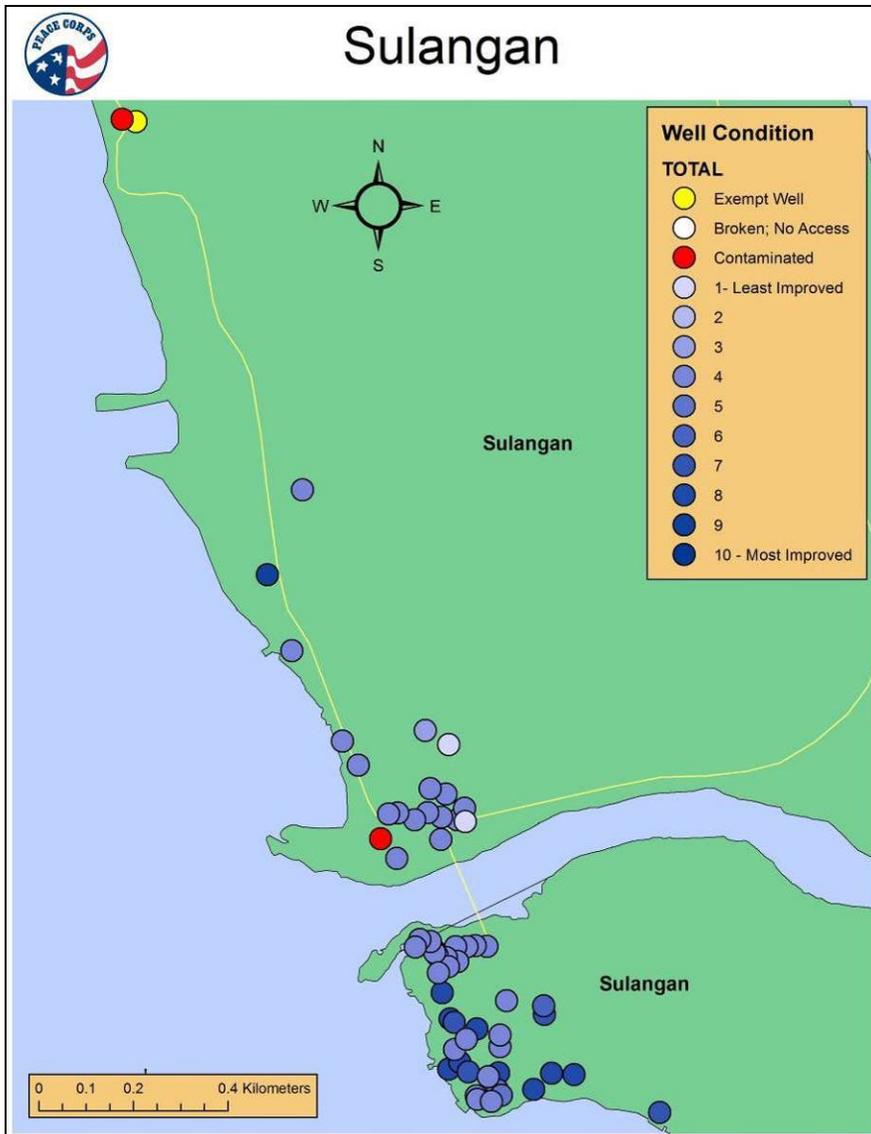
Issues: No water at the elementary school

Priorities: General Improvement plan, get the children some water.

Banaag is on the southern coast of Manicani Island. The BWS at the elementary school was destroyed by Yolanda and has not been recovered. This is unfortunate because it directly supplied the elementary school. The pump is not functioning therefore the children have to carry their water. There is one contaminated well. Looks like the well is collecting only fallen leaves and is not a threat to become a garbage can.

Wells are generally improved with a few newly dug wells associated with temporary housing. There only a few pumps, so improvement will be in the form of better drainage and covers.

Banaag has a WWII US Navy dam on one of the larger creeks. It only functions as a bridge today. Banaag evidently does not use its flowing water to any great extent for utility purposes.



Number of Wells Sampled: 60

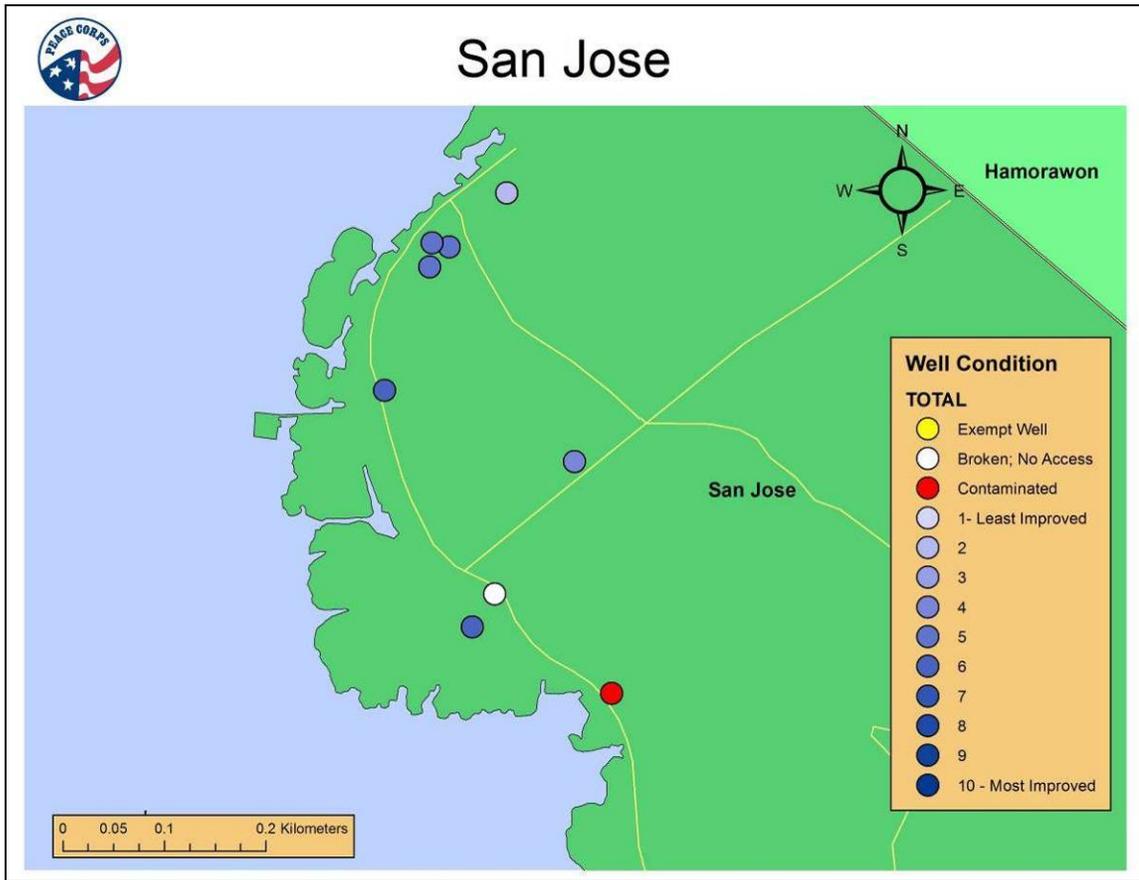
Average Improvement Score: 4.6

Issues: Salt water intrusion

Priorities: General Improvement, Cover the wells, etc.

Sulangan is at the southern tip of Calicoan Island and has a large number of improved wells without pumps nor covers. There are two parts to Sulangan, north and south of the bridge. To help decrease the possibility of further salt intrusion the MWS is piped 10 or so kilometers south from the pumping stations in the highlands of the peninsula. The remote supply coupled with a widely dispersed and bucket draw from shallow wells is a best case scenario for minimizing salt intrusion. As noted earlier, the wells north of the bridge, are supplied with fresh water on the high tides. This phenomena may occur south of the bridge, but was not noted by the residents or observed by the surveyor.

The surveyor found two contaminated wells, both north of the bridge: Well-52 and Well-59. Well-59 is adjacent to the well nominated for preservation.



Number of Wells Sampled: 8

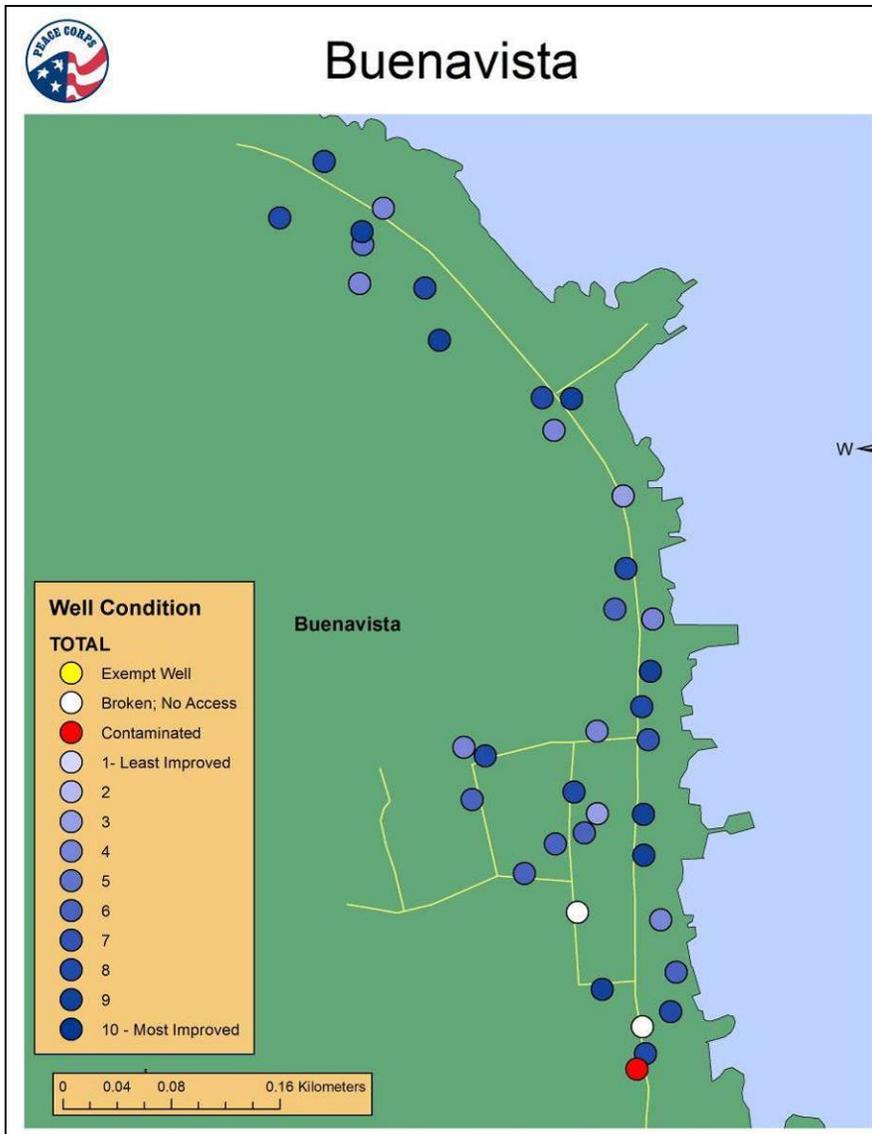
Average Improvement Score: 4.1

Issues: Deterioration in BWS water piping.

Priorities: Fix leaks

San Jose has a spring capture box as a BWS and piping throughout the barangay proper. Consequently there are fewer dug wells as primary water sources. Water is abundant so maintenance of piping doesn't seem to be a problem. The flow of water is controlled by sticking a stopper into the end of a hose. Faucet leaks are repaired with electrical tape etc. As noted earlier, it is difficult to determine whether the condition of the pipes is storm related or just delayed routine maintenance.

One contaminated well (Well-1) was observed at a Yolanda affected residence.



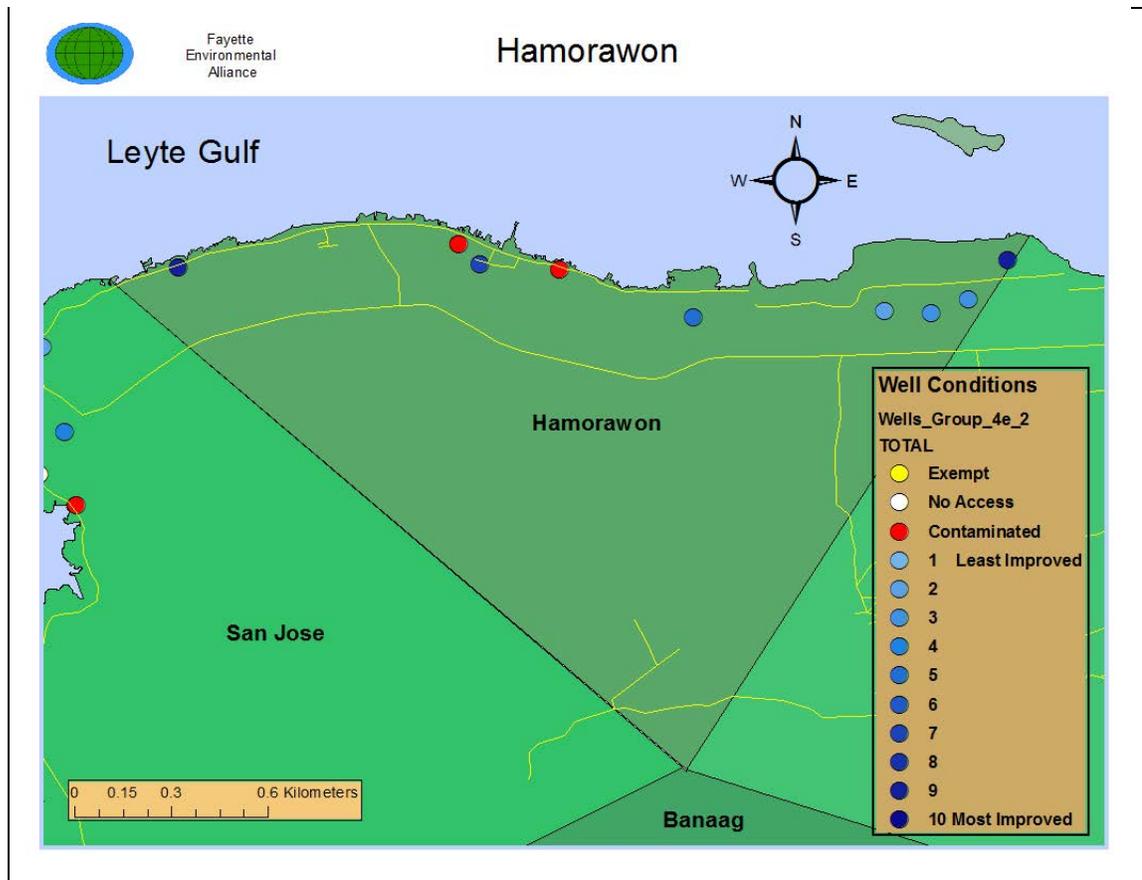
Number of Wells Sampled: 35

Average Improvement Score: 6.4

Issues: none specific

Priorities: General improvement

Buenavista is on the east coast of Mancani and is served by a BWS. There are a few small creeks that run through the town. One abandoned well is abandoned at the southern end of town (Well-9) and is overgrown. Some wells are sporting newly constructed concrete covers. Our visit to Mancani was planned by UN staff so there may have been some preparation. If so, this is an encouraging sign.



Number of Wells Sampled: 9
 Average Improvement Score: 4.2

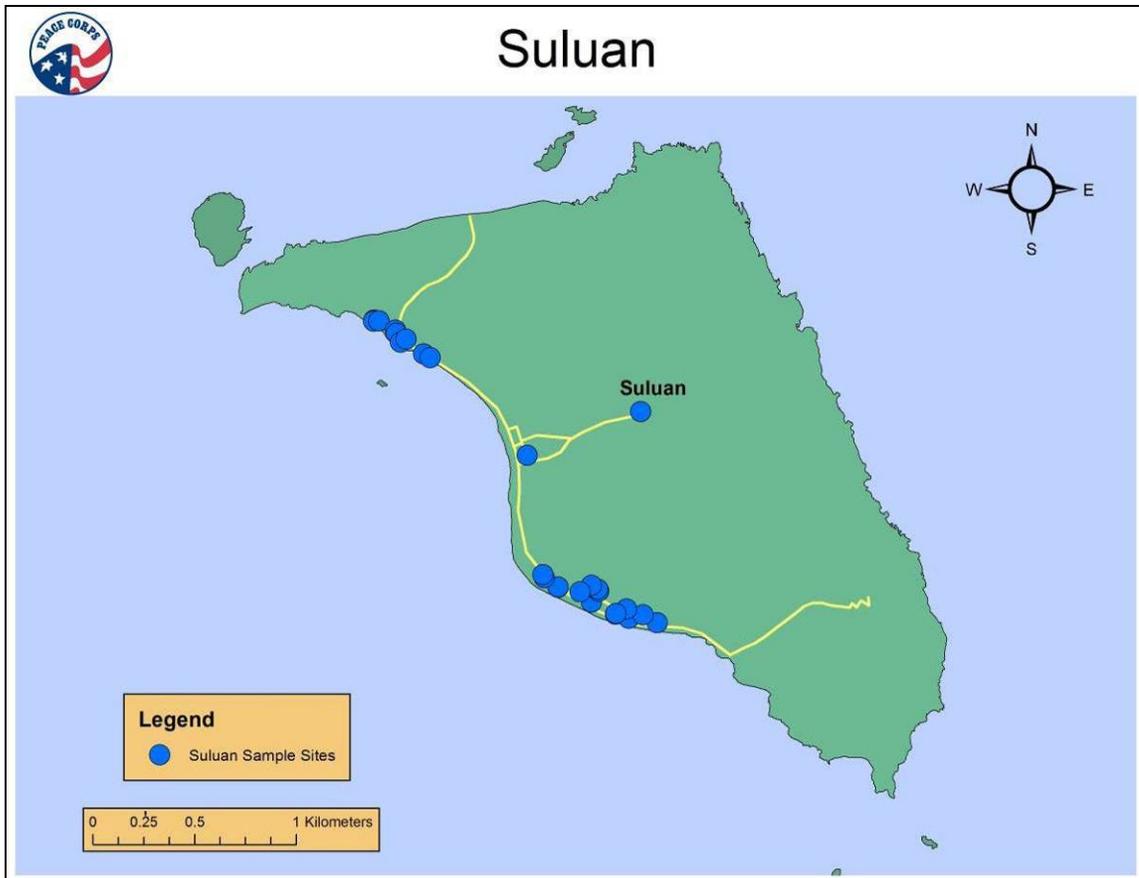
Issues: leaking pipes

Priorities: Control and improve access at streams.

Homorawon has abundant running water. The local leadership needs to consider installing fountains to control and hold the flow for access. Spring capture is taking place at higher elevations and piped to holding tanks along the coast. The BWS is piped to the residents via dual faucet standpipes. Surprisingly the elementary school is without a water source. The fountain recommendation may be far-fetched, however, at streams the BWS is run by hose to the creekside. The surveyor assumes that the creek provides water for primary washing and rinsing and the hose supplies final rinse water. Minimal improvement to these creeks will help residents with their washing day chores.

As with other locations with a large amount of flexible pipes, routine maintenance is needed. The hose end stopper is not a reliable way to control water flow. Indeed the water is so plentiful in Homorawon that controlling the flow anywhere is not an issue.

Homorawon has a two contaminated wells observed among the wells surveyed, the eastern half of the barangay was surveyed July 15, 2018 on a revisit, average scores are a result of the 2014 and 2018 surveys.



Number of Wells Sampled: 23

Average Improvement Score: N/A

Issues: Salt water intrusion

Priorities: Extend BWS to all areas.

Suluan has a BWS applying spring capture upland a short way from the population center, with apparently abundant piped water throughout the population center. The elevation of the supply is not that great, so pressure at the end of the runs is small. Residents have excavated pits to allow for more drop in flow. The Pipe extends to the edges of the rural areas. Since time on the island was limited, only the wells in the rural areas were surveyed. There is a large tidal effect on the wells and salt intrusion is a problem.



Number of Wells Sampled: 0

Average Improvement Score: N/A

Issues:

Priorities:

The downtown areas were not surveyed. It is high density residential served extensively by the MWS. Surface features include a popular spring in Ward 12 enjoyed by young and old. It has a large pool with tidal influences.