

## Water Quality Information of Ground Water in 10 islands of L. Atoll – UNDP LECReD

### 1) L. Dhanbidhoo

#### 3.1.4 Groundwater (well water)

At Dhanbidhoo, 85.2 % of households believes that the groundwater available for consumption is safe to use. Table 7 shows that 14.1% of the households do not feel it is safe to use for non-portable use at the households.

Islands	Is Well Water Safe as percentage of households		
	Yes	No	Not Stated
L.Dhabidhoo	85.2	14.1	0.7

Table 7: Household perception on the safety of the groundwater for their consumption. (Source: Population and Housing Census 2014)

#### 3.1.11 Quality of Groundwater at Households

About 87.5% of the households stated that the groundwater from the wells at their houses did not had any smell while 12.5% of the households reported that the groundwater had a smell. Figure 14, Figure 15 and Figure 16 shows the contour maps of the groundwater tested from the households where household questionnaire was undertaken.

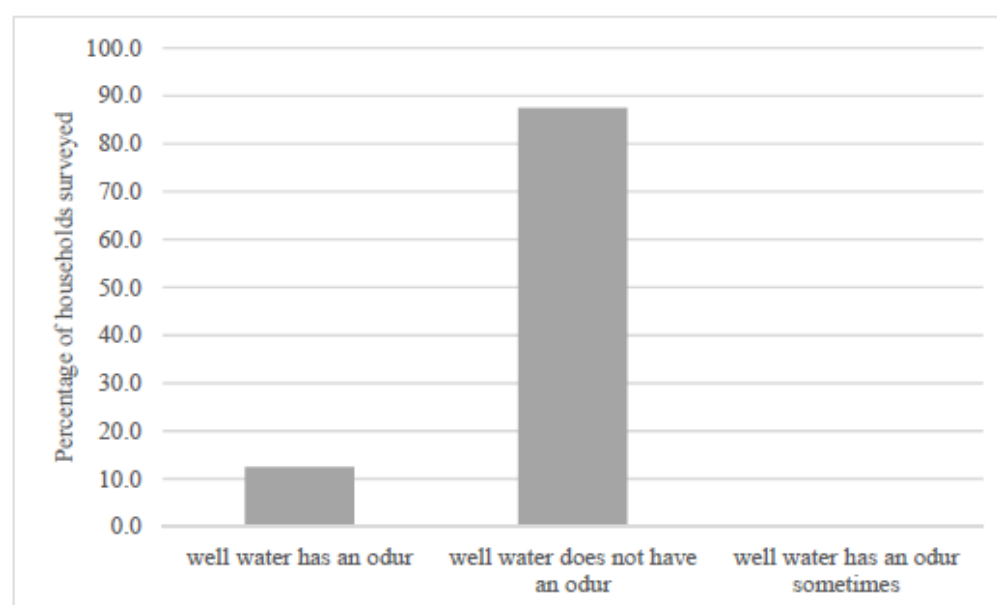


Figure 13: Quality of groundwater at the households

WHO guidelines suggest a maximum Chloride content of 250 mg/l for potable uses which equates to a conductivity of approximately 1,500  $\mu\text{S}/\text{cm}$ . However experience in other small island states (Falkland, 2001) confirms whilst this is desirable, a more realistic limit is 2,500  $\mu\text{S}/\text{cm}$ .

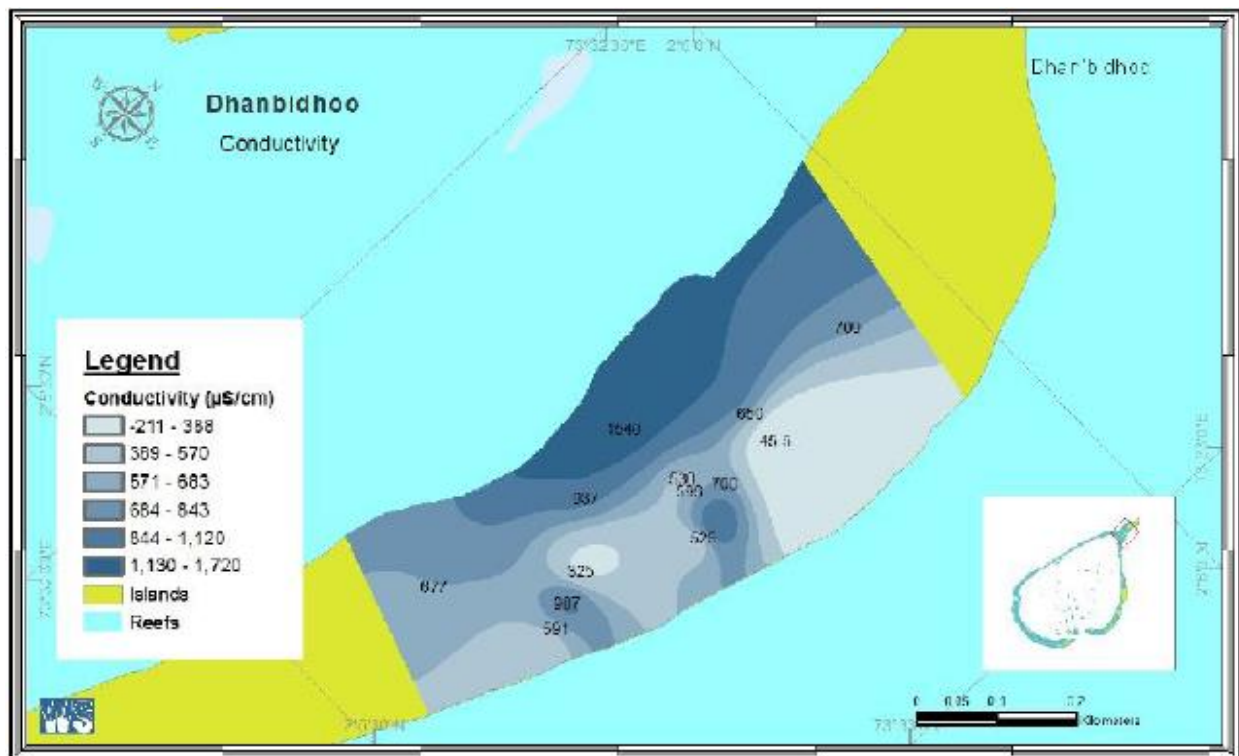
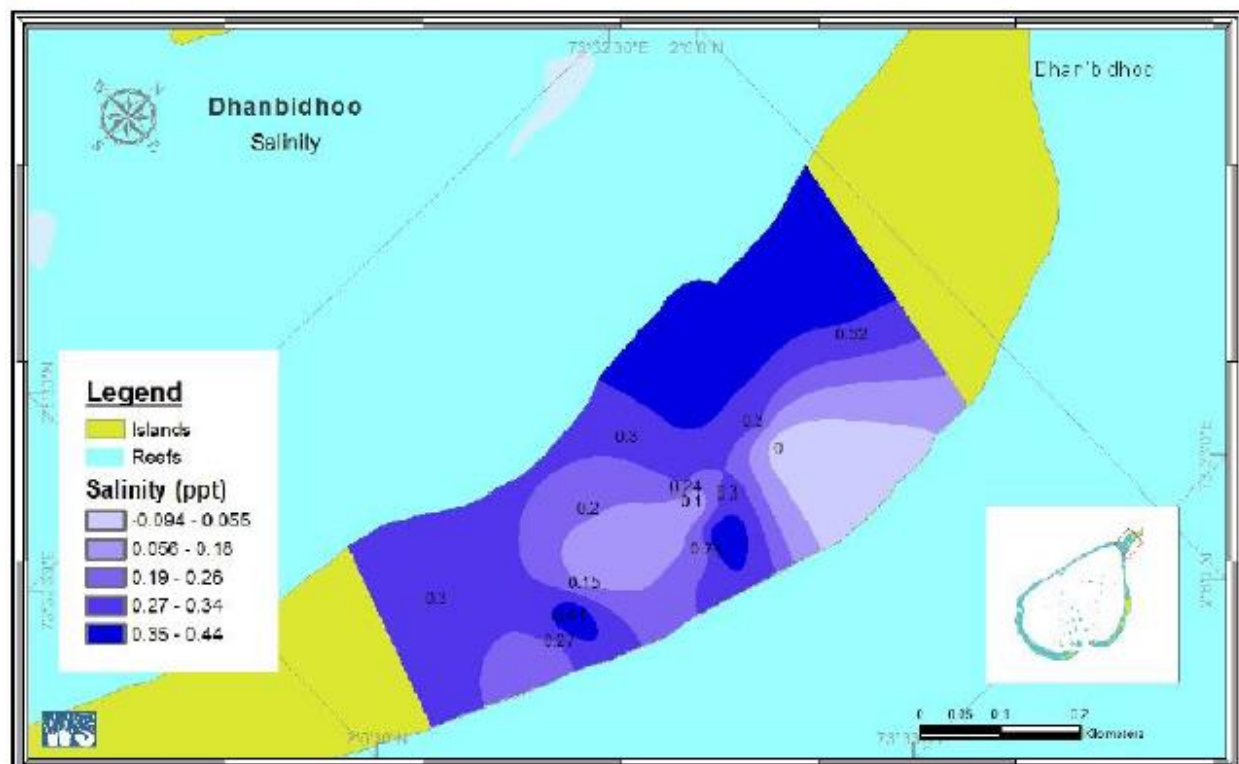


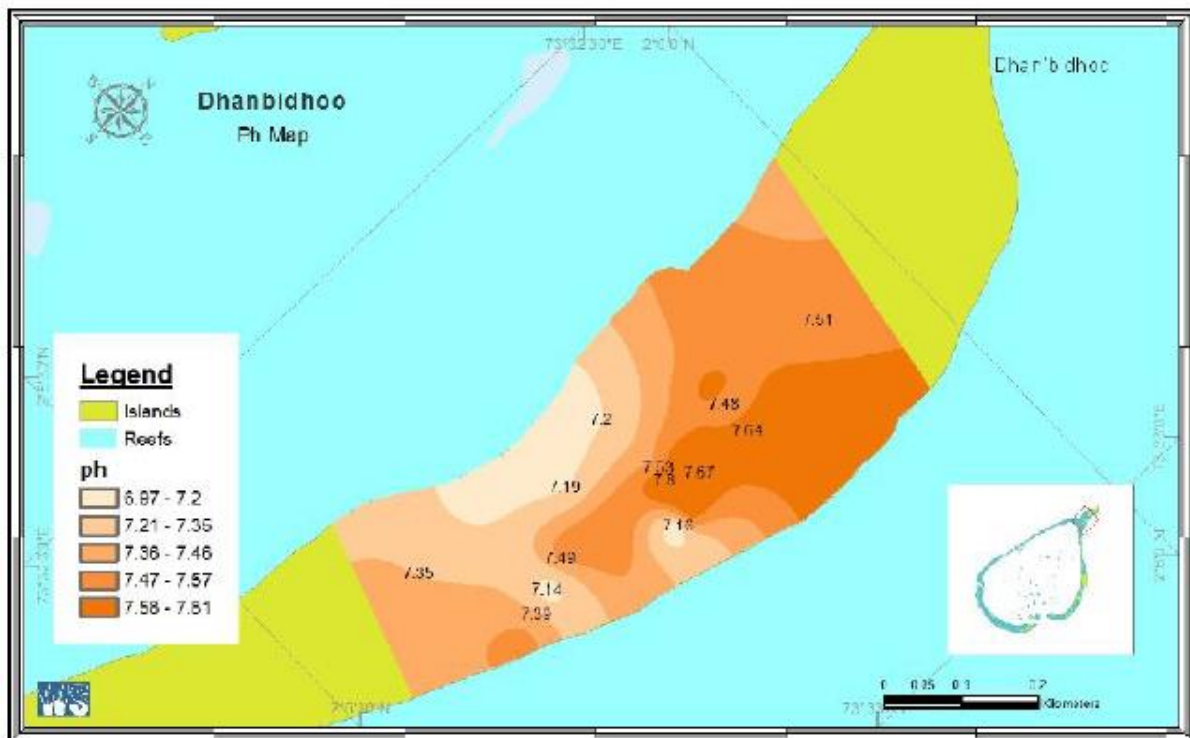
Figure 14: Conductivity map of the groundwater tested from surveyed households

Using the definition (Falkland, 2001), it is clear from the Figure 14 above that Dhanbidhoo has groundwater, on larger parts of the island, which has salinity level below 1,500  $\mu\text{S}/\text{cm}$ . The groundwater in these area could be classified as fresh in terms of physical parameters.

Testing for salinity at the island (Figure 15) showed that the groundwater of the island had different salinity across the island. Salinity was lowest in the centre of the island while it was observed to be highest on the reclaimed area near the harbour area on northern side of the island.



The pH level of ground water at island showed variation of its value from neutral level (7.5) from acidic level to alkaline level. Low level of acidity of groundwater was found on north western side of the island while the groundwater was alkaline on south eastern side of island.



## 2) L. Hithadhoo

### 3.3.4 Groundwater (well water)

At Hithadhoo, 76.1 % of households believes that the groundwater available for consumption is safe to use. Table 17 shows that 22.3% of the households do not feel it is safe to use for non-portable use at the households.

Islands	Is Well Water Safe as percentage of households		
	Yes	No	Not Stated
L.Hithadhoo	76.1	22.3	1.6

Table 17: Household perception on the safety of the groundwater for their consumption. (Source: Population and Housing Census 2014)

### 3.3.11 Quality of Groundwater at Households

44.0 % of the households stated that the groundwater from the wells at their houses did not had any smell. 12.0% of the households stated that the water from the wells smelled while 44.0 % of the households reported that the groundwater had a smell.

Figure 46, Figure 47 and Figure 48 shows the contour maps of the groundwater tested from the households where household questionnaire was undertaken.

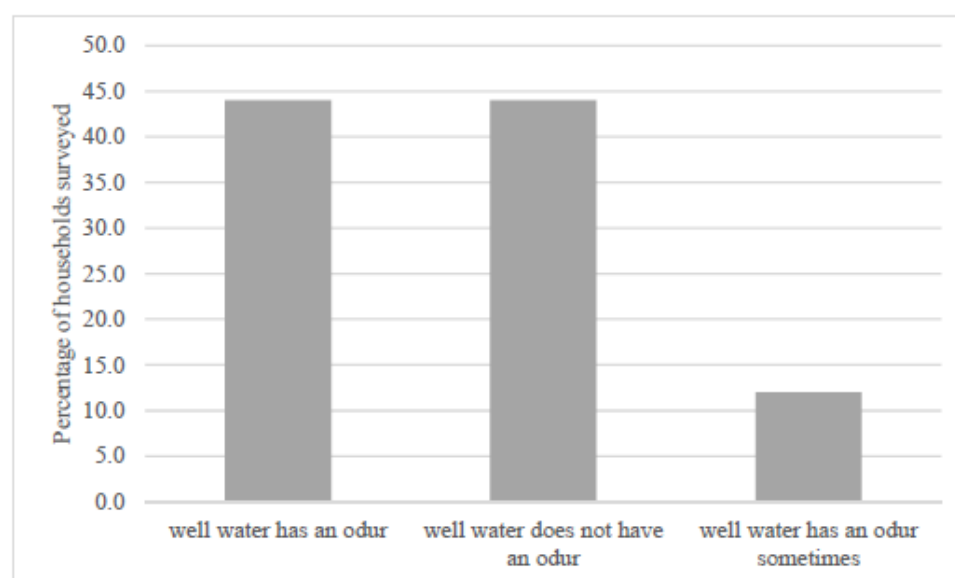


Figure 45: Quality of groundwater at the households





Figure 46: Conductivity map of the groundwater tested from surveyed households

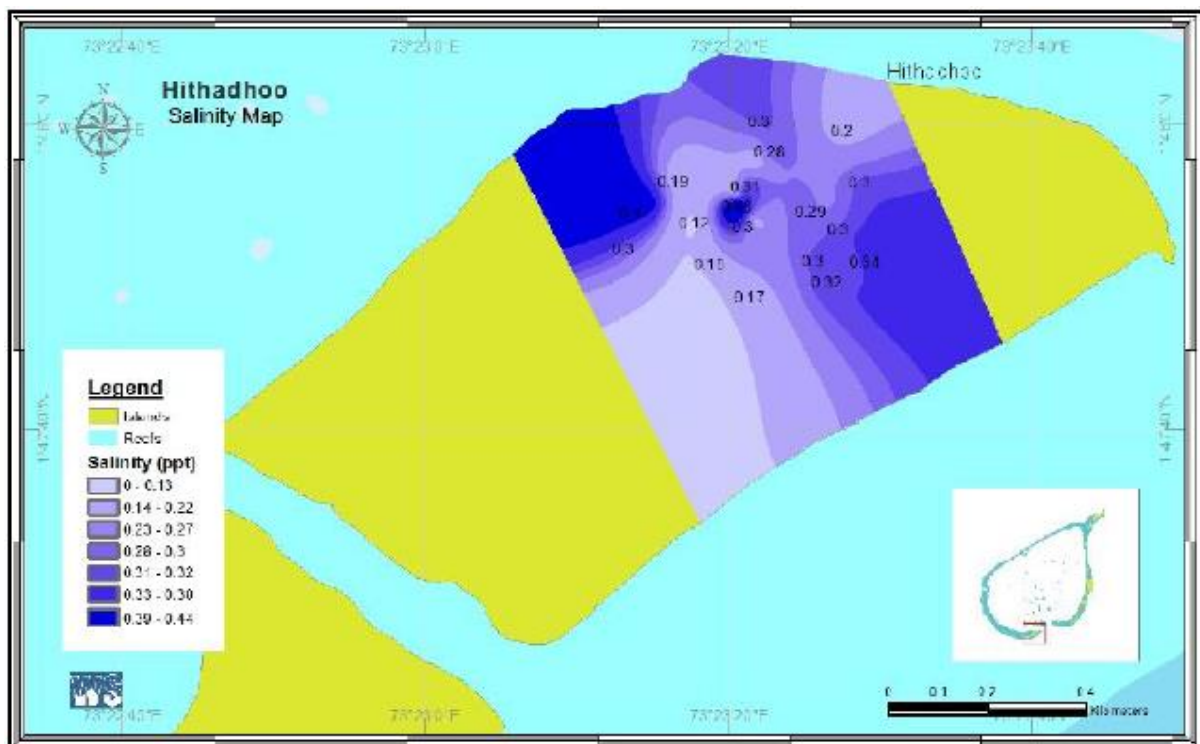


Figure 47: Salinity map of the groundwater tested from surveyed households

The pH level of ground water at island showed variation of its value from neutral level (pH 7.5) from acidic level to alkaline level (see Figure 48). The pH level varied from 6.97 to 7.81. The pH measurement from households showed that the groundwater of the island is mostly alkaline. Low pH values for groundwater was observed on eastern side of the island.

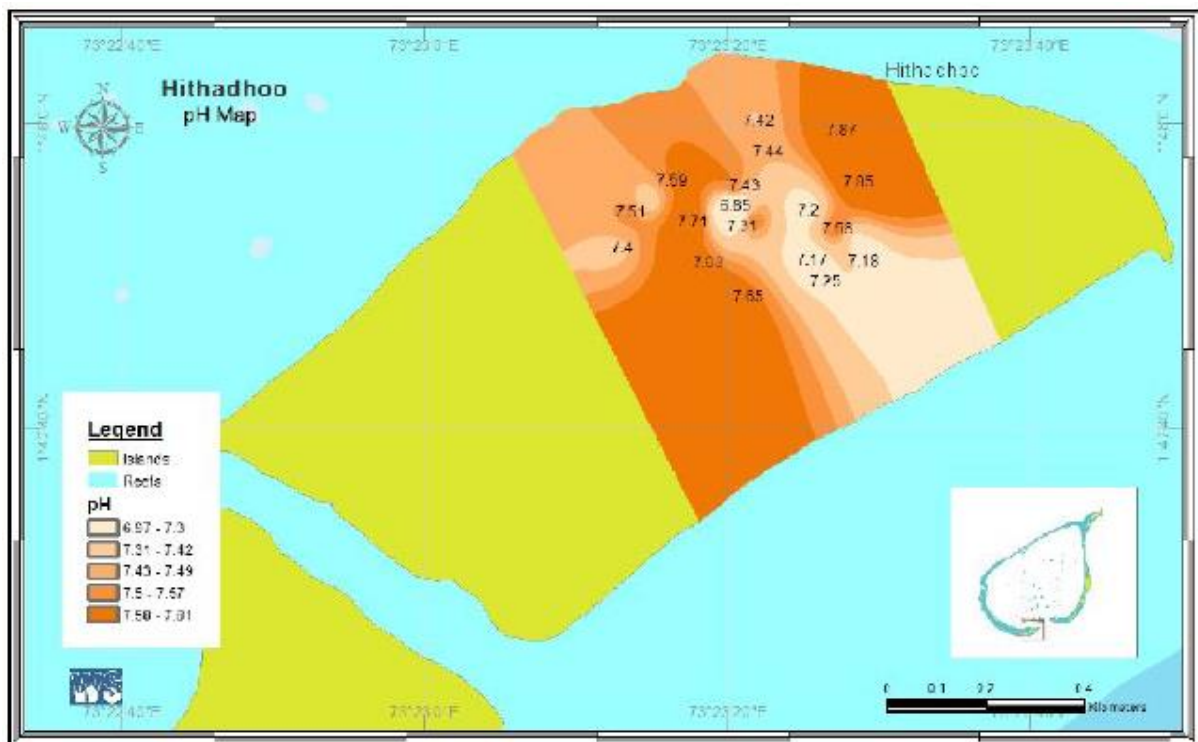


Figure 48: pH map of the groundwater tested from surveyed households

### 3) L. Isdhoo

#### 3.4.4 Groundwater (well water)

At Isdhoo, 95.5 % of households stated that the groundwater available for consumption is safe to use. See Table 22 Shows that 4.5 % of the households stated that they did not feel it is safe to use groundwater for non-portable use at the households.

Islands	Is Well Water Safe as percentage of households		
	Yes	No	Not Stated
L.Isdhoo	95.5	4.5	0.0

Table 22: Household perception on the safety of the groundwater for their consumption. (Source: Population and Housing Census 2014)

#### 3.4.11 Quality of Groundwater at Households

81.0 % of the households stated that the groundwater from the household well did not had any smell. 19.0% of the households stated that the water from their wells smelled. (see Figure 61).

Figure 62, Figure 63 and Figure 64 shows the contour maps of the groundwater tested from the households where household questionnaire was undertaken.

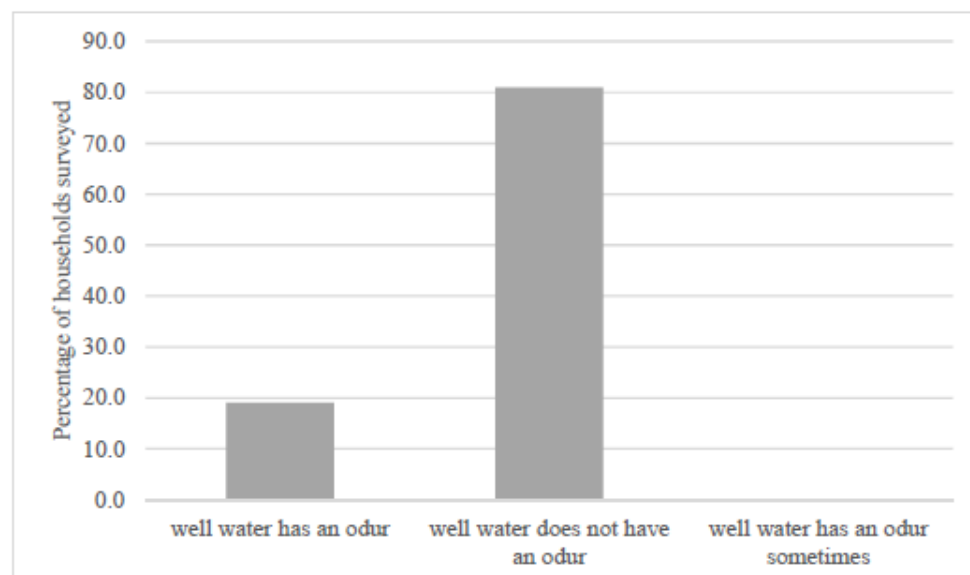


Figure 61: Quality of groundwater at the households

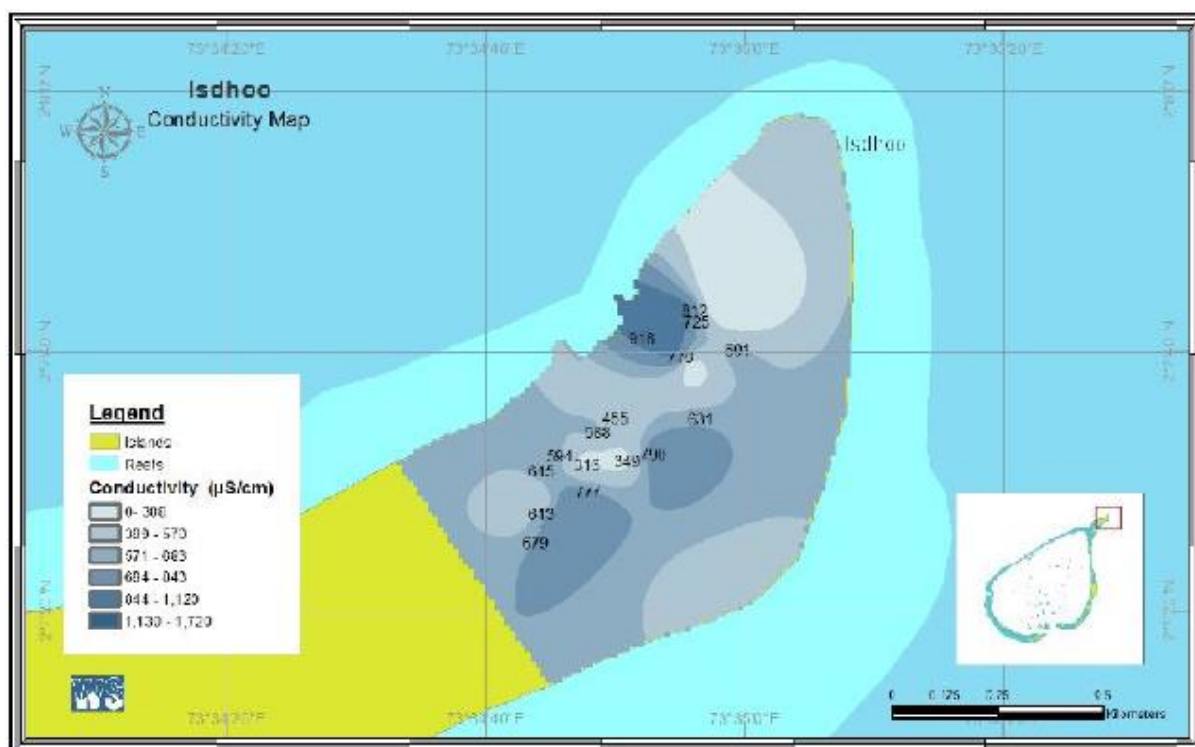


Figure 62: Conductivity map of the groundwater tested from surveyed households

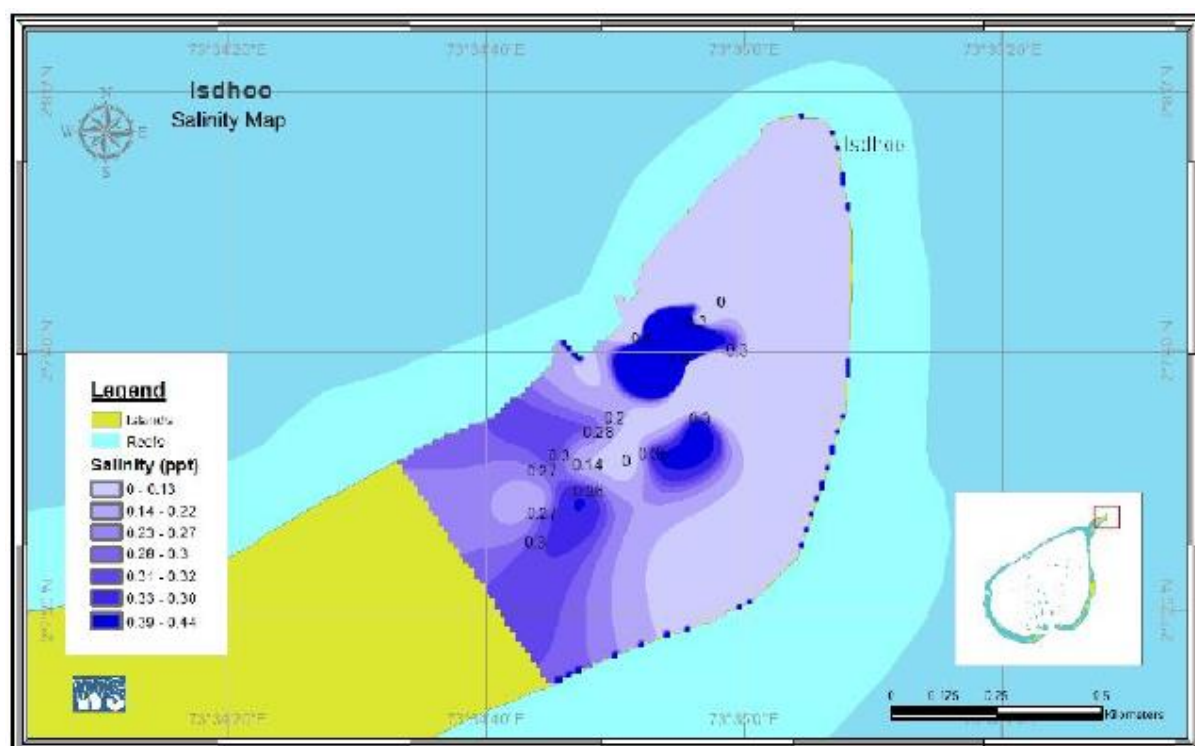


Figure 63: Salinity map of the groundwater tested from surveyed households

The pH level of ground water at island showed variation of its value from neutral level (pH 7.5) from acidic level to alkaline level (see Figure 64). The pH level varied from 6.97 to 7.81. The pH measurement from households showed that the groundwater of the island is mostly alkaline. Low pH values for groundwater was observed on northern and southern side of the island.



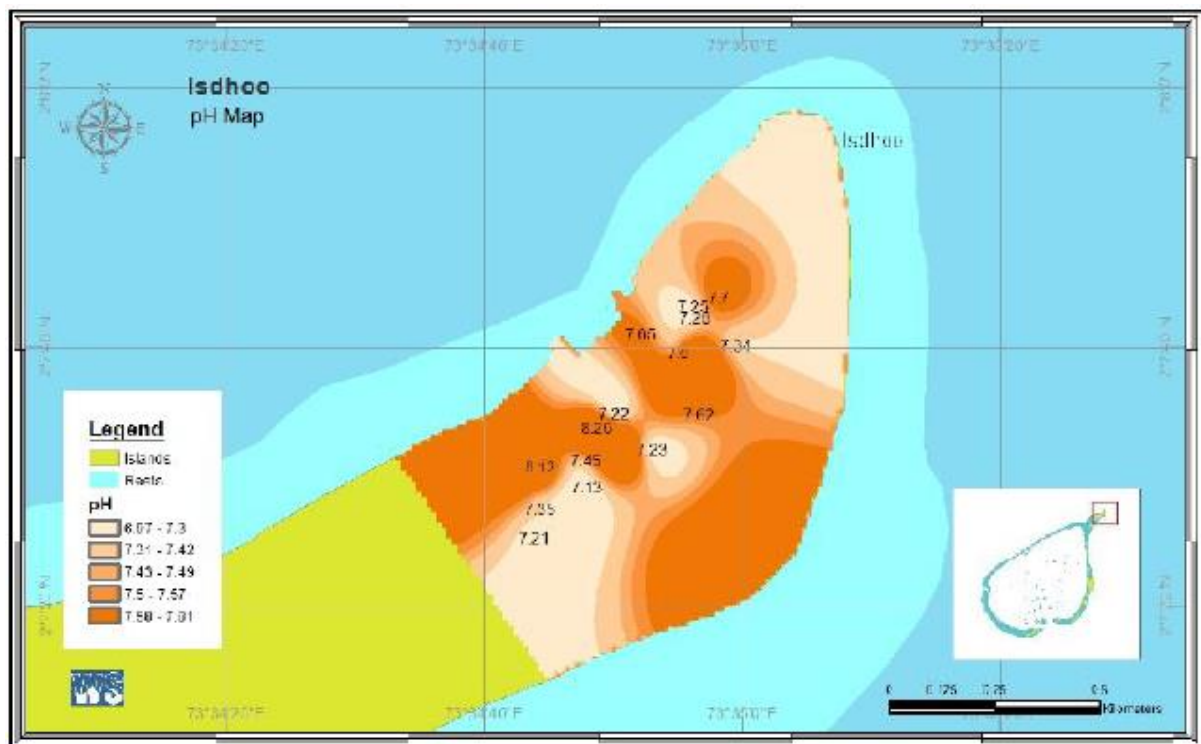


Figure 64: pH map of the groundwater tested from surveyed households

#### 4) L. Kalaidhoo

##### 3.5.4 Groundwater (well water)

At Kalaidhoo, 85.2 % of households believes that the groundwater available for consumption is safe to use. Table 27 shows that 26.1 % of the households do not feel it is safe to use for non-portable use at the households.

Islands	Is Well Water Safe as percentage of households		
	Yes	No	Not Stated
L.Kalaidhoo	71.6	26.1	2.2

Table 27: Household perception on the safety of the groundwater for their consumption. (Source: Population and Housing Census 2014)

##### 3.5.11 Quality of Groundwater at Households

52.9 % of the households stated that the groundwater from the household wells did not had any smell. While 47.1% of the households stated that the water from their wells had a smell. (see Figure 77).

Figure 78, Figure 79 and Figure 80 shows the contour maps of the groundwater tested from the households where household questionnaire was undertaken.

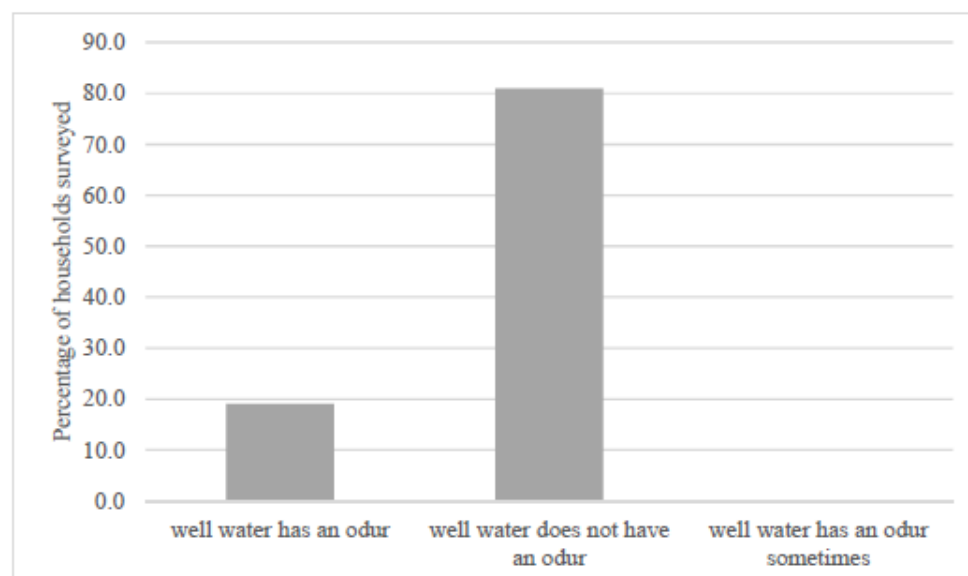


Figure 77: Quality of groundwater at the households

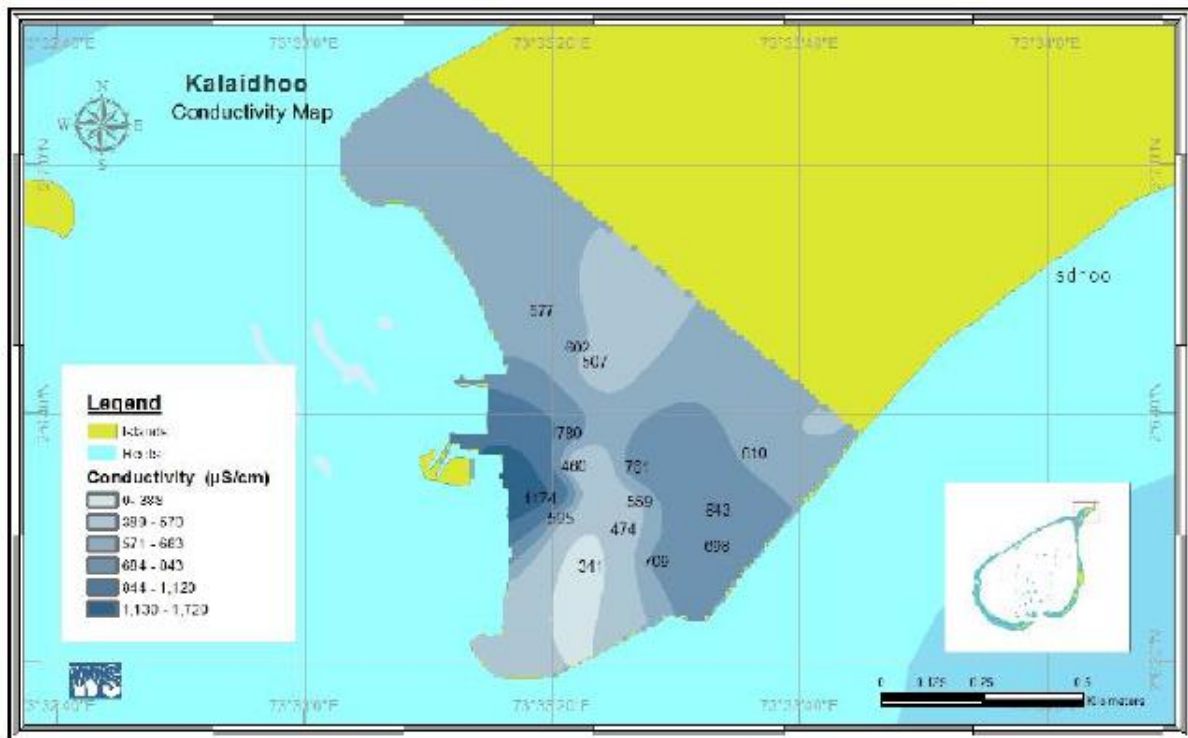


Figure 78: Conductivity map of the groundwater tested from surveyed households

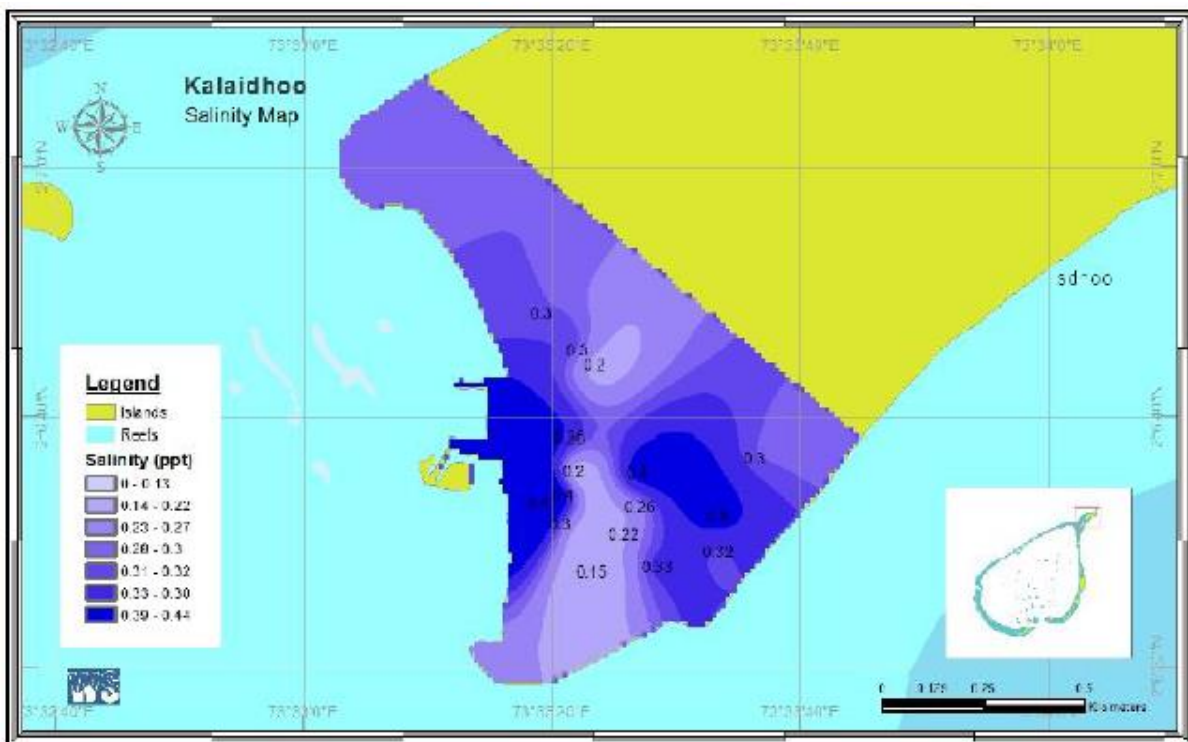


Figure 79: Salinity map of the groundwater tested from surveyed households

The pH level of ground water at island showed variation of its value from neutral level (pH 7.5) from acidic level to alkaline level (see Figure 80). The pH level varied from 6.97 to 7.81. The pH measurement from households showed that the groundwater of the island is mostly alkaline. Low pH values for groundwater was observed on southern side of the island near the harbour area and eastern side of the island.





## 5) L. Kunahandhoo

### 3.6.4 Groundwater (well water)

At Kunahandhoo, 17.9 % of households stated that the groundwater available for consumption from their wells is safe to use. Table 32 shows that 82.1 % of the households do not feel it is safe to use groundwater for non-portable use at the households. (see Table 7).

Islands	Is Well Water Safe as percentage of households		
	Yes	No	Not Stated
L.Kunahandhoo	17.9	82.1	0.0

Table 32: Household perception on the safety of the groundwater for their consumption. (Source: Population and Housing Census 2014)

#### 3.6.11 Quality of Groundwater at Households

64.8 % of the households stated that the groundwater from the household wells did not had any smell. 7.1% of the surveyed households stated they had odour from their groundwater sometime. While 28.6 % of the households stated that the water from their wells had a smell. (see Figure 93).

Figure 94, Figure 95 and Figure 96 shows the contour maps of the groundwater tested from the households where household questionnaire was undertaken.

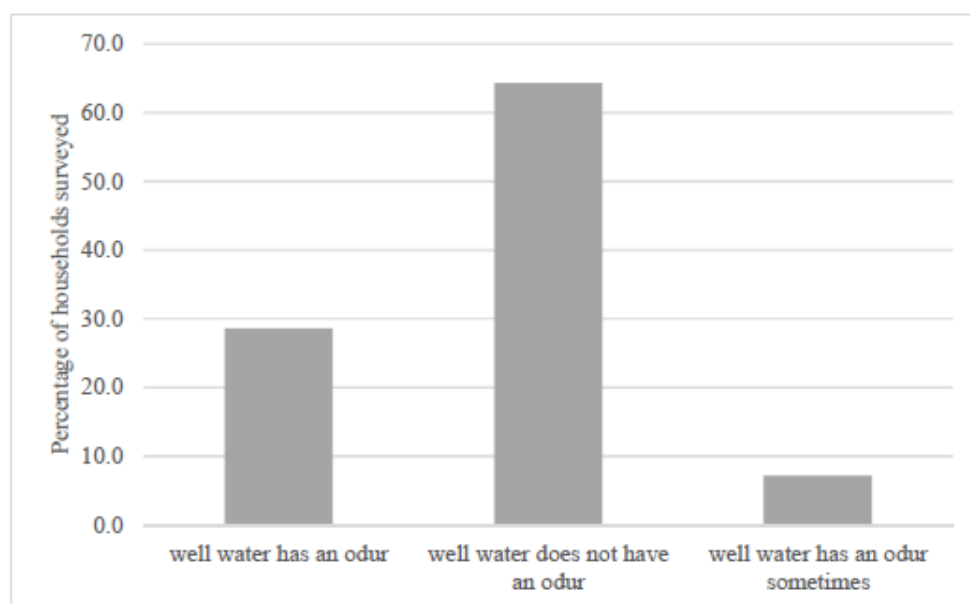


Figure 93: Quality of groundwater at the households

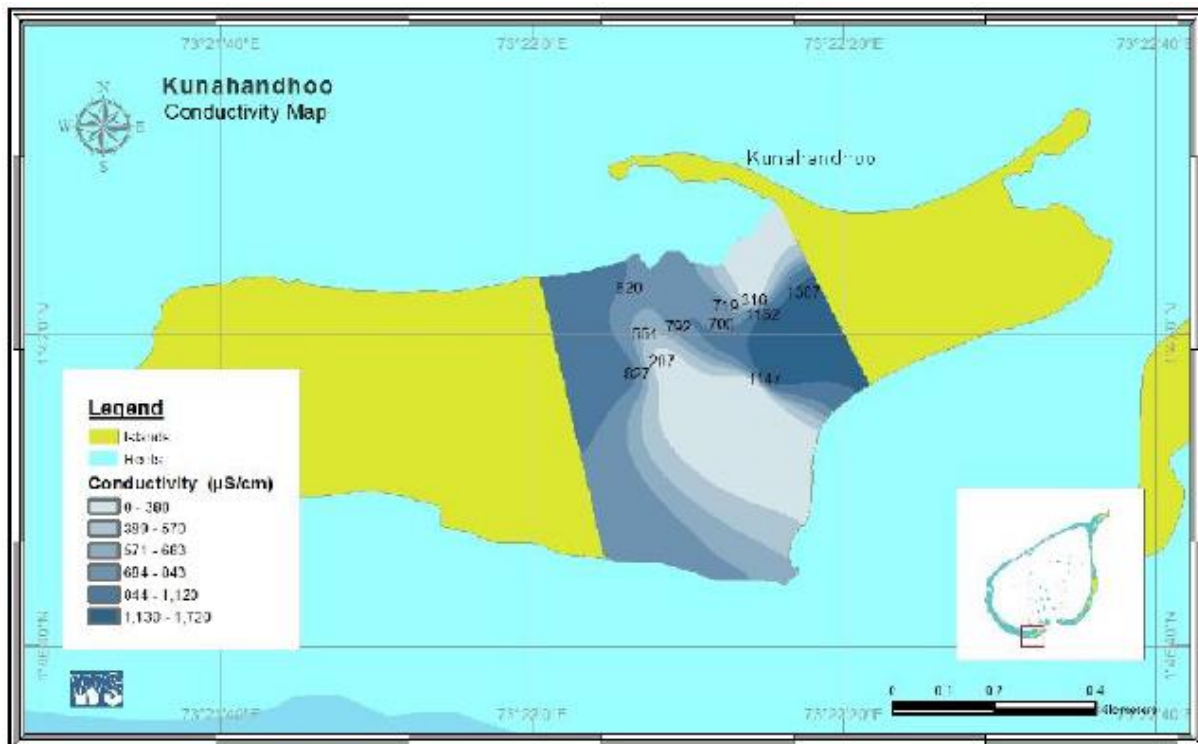


Figure 94: Conductivity map of the groundwater tested from surveyed households

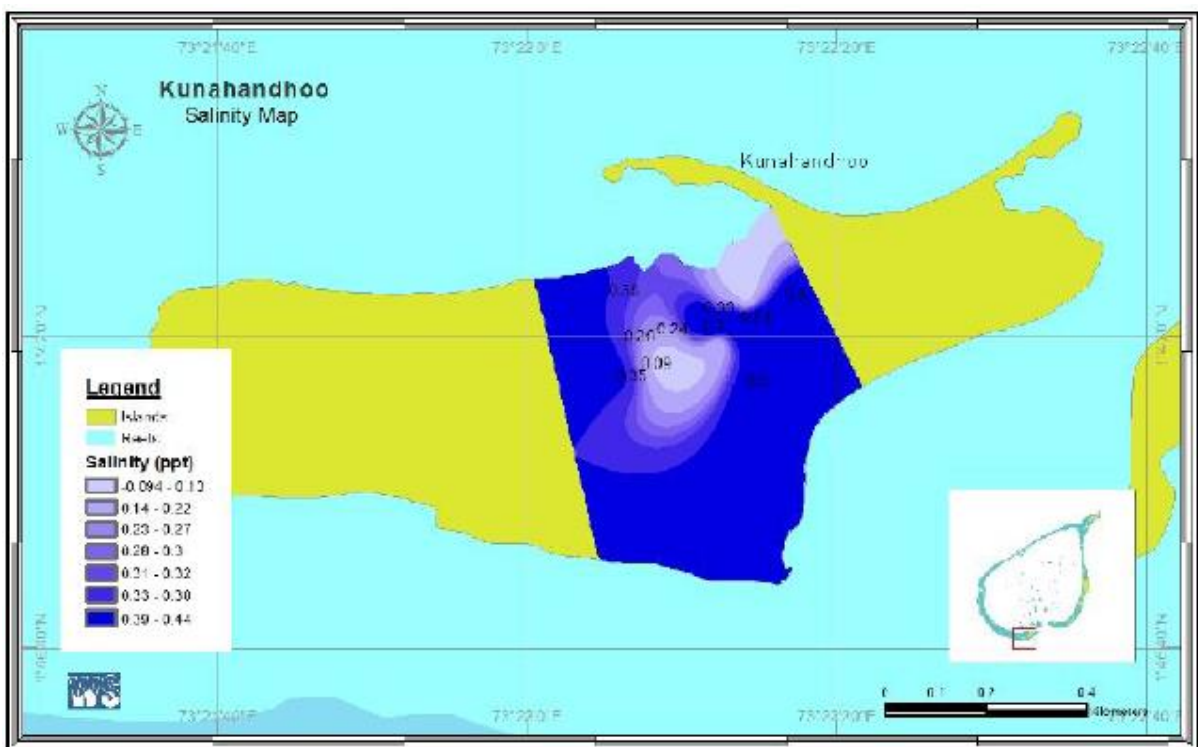


Figure 95: Salinity map of the groundwater tested from surveyed households

The pH level of ground water at island showed variation of its value from neutral level (pH 7.5) from acidic level to alkaline level (see Figure 96). The pH measurement from households showed that the groundwater of the island is mostly acidic. High pH values for groundwater was observed on northern side of the island near the harbour area and areas that had been reclaimed as part of the reclamation project at the island.

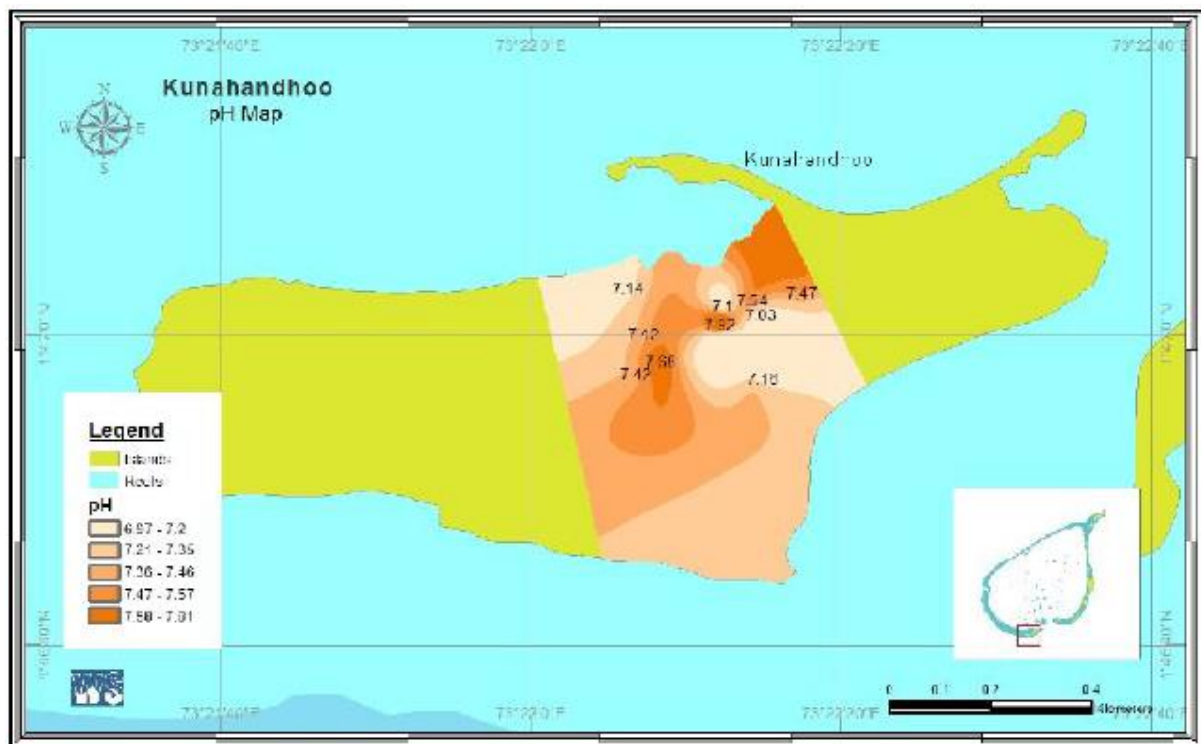


Figure 96: pH map of the groundwater tested from surveyed households

## 6) L. Maabaidhoo

### 3.7.4 Groundwater (well water)

At Maabaidhoo, 51.5 % of households stated that the groundwater available at their household for consumption is safe to use. Table 37 shows that 48.5 % of the households do not feel it is safe to use groundwater for non-portable use at the households. .

Islands	Is Well Water Safe as percentage of households		
	Yes	No	Not Stated
L.Maabaidhoo	51.5	48.5	0.0

Table 37: Household perception on the safety of the groundwater for their consumption. (Source: Population and Housing Census 2014)

#### 3.7.11 Quality of Groundwater at Households

52.9 % of the households stated that the groundwater from the household wells did not had any smell. 17.6% of the surveyed households stated they had odour from their groundwater sometimes. While 29.4 % of the households stated that the water from their wells had a smell. (See Figure 109).

Figure 110, Figure 111 and Figure 112 shows the contour maps of the groundwater tested from the households where household questionnaire was undertaken.

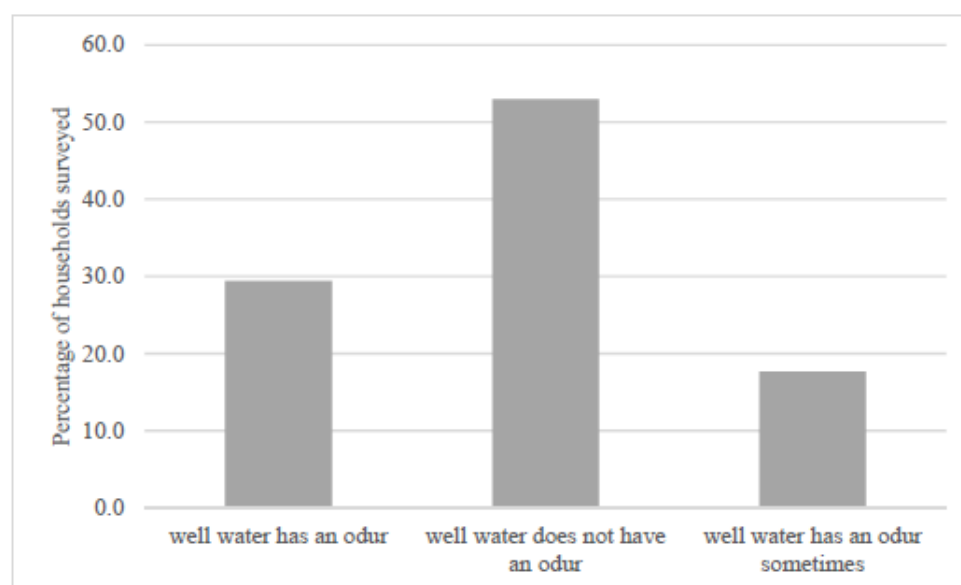


Figure 109: Quality of groundwater at the households



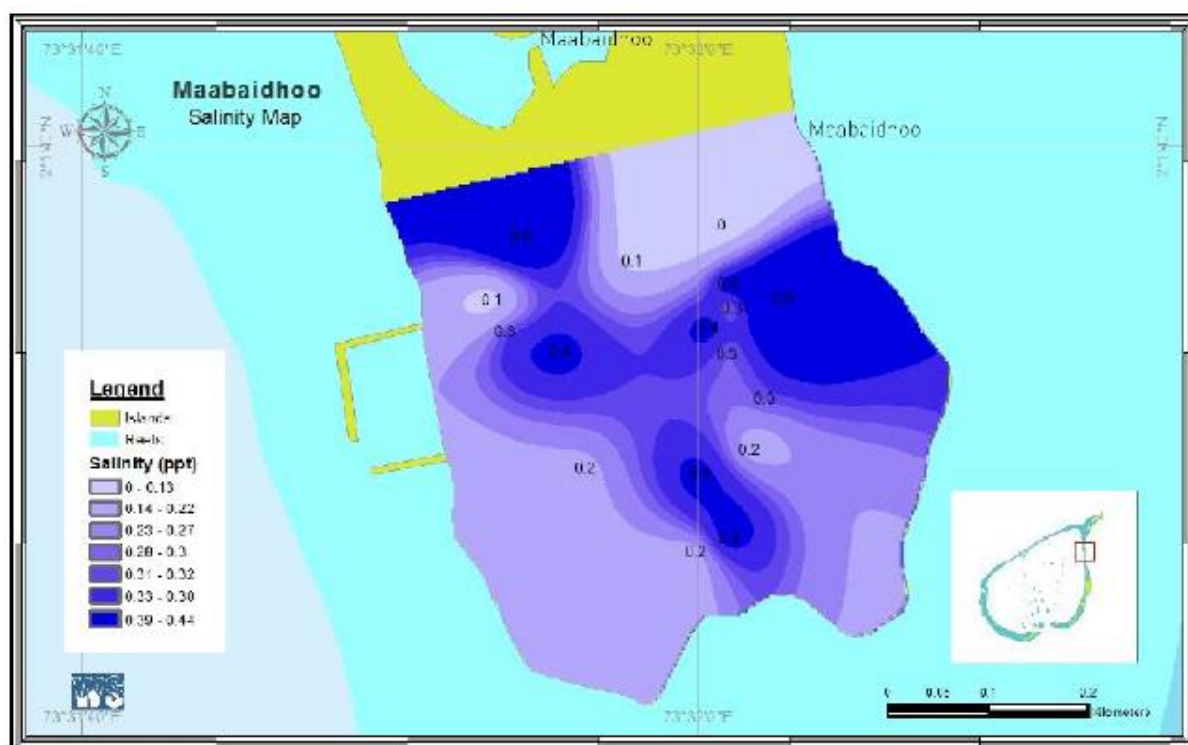
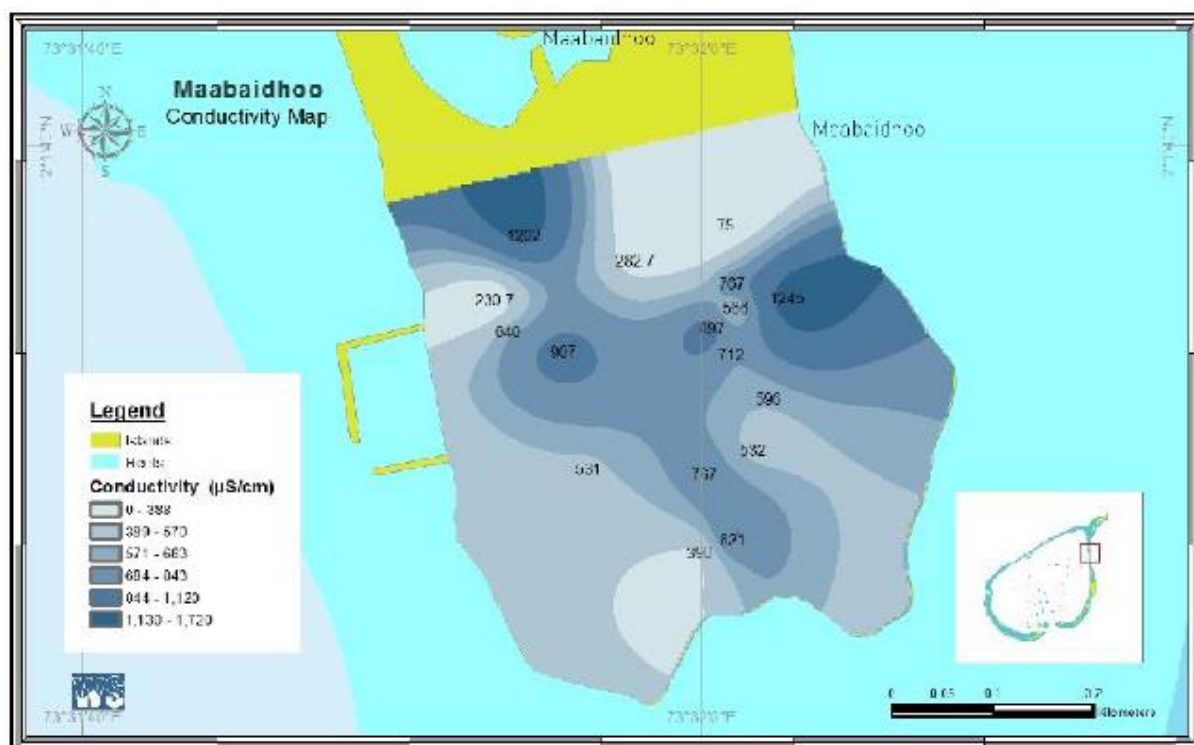


Figure 111: Salinity map of the groundwater tested from surveyed households

The pH level of ground water at island showed variation of its value from neutral level (pH 7.5) from acidic level to alkaline level (see Figure 112). The pH measurement from households showed that the groundwater of the island is mostly acidic except from few houses which were located at the centre of the island, where the pH level of the ground water was lower than pH 7.5.

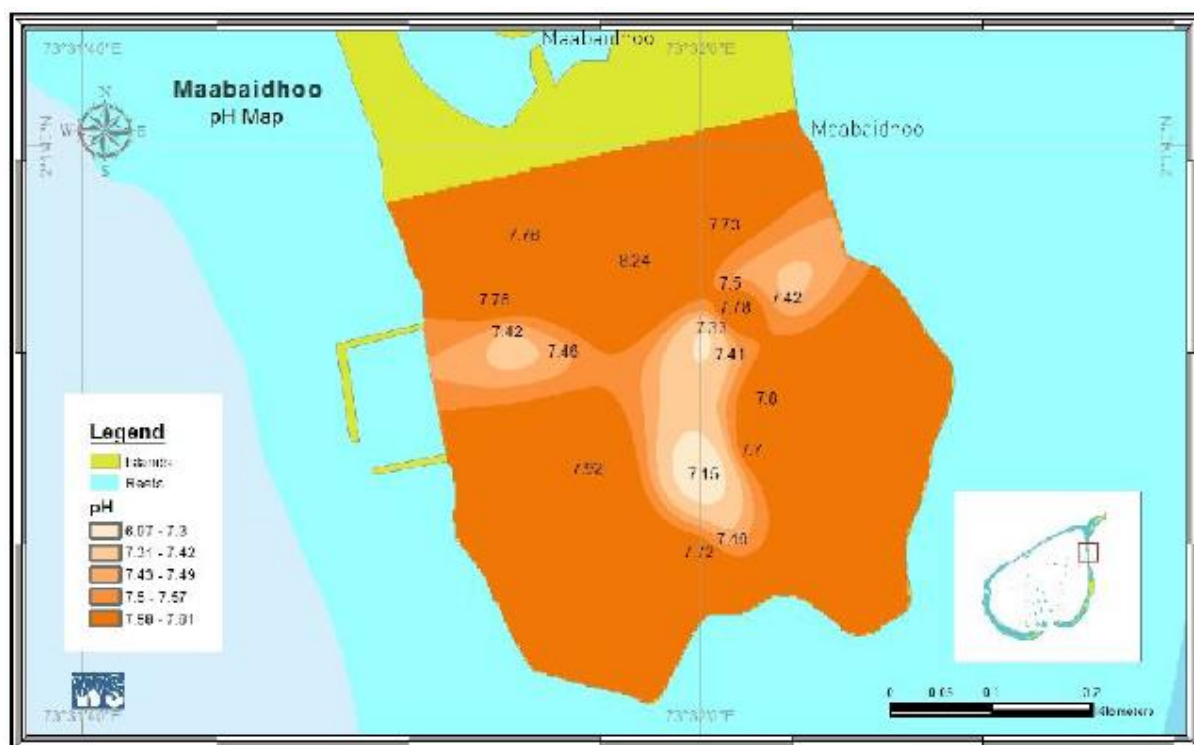


Figure 112: pH map of the groundwater tested from surveyed households

## 7) L. Mundoo

### 3.8.4 Groundwater (well water)

At Mundhoo, 95.3 % of households stated that the groundwater available for consumption is safe to use at their household. Table 42 shows that 4.7 % of the households do not feel it is safe to use groundwater from their wells for non-portable use at the households. .

Islands	Is Well Water Safe as percentage of households		
	Yes	No	Not Stated
L.Mundhoo	95.3	4.7	0.0

Table 42: Household perception on the safety of the groundwater for their consumption. (Source: Population and Housing Census 2014)

### 3.8.11 Quality of Groundwater at Households

73.3 % of the households stated that the groundwater from the household wells did not had any odour. 13.3 % of the surveyed households stated they had an odour from their groundwater wells sometimes. While 13.3 % of the households stated that the water from their wells had a smell. (See Figure 109).

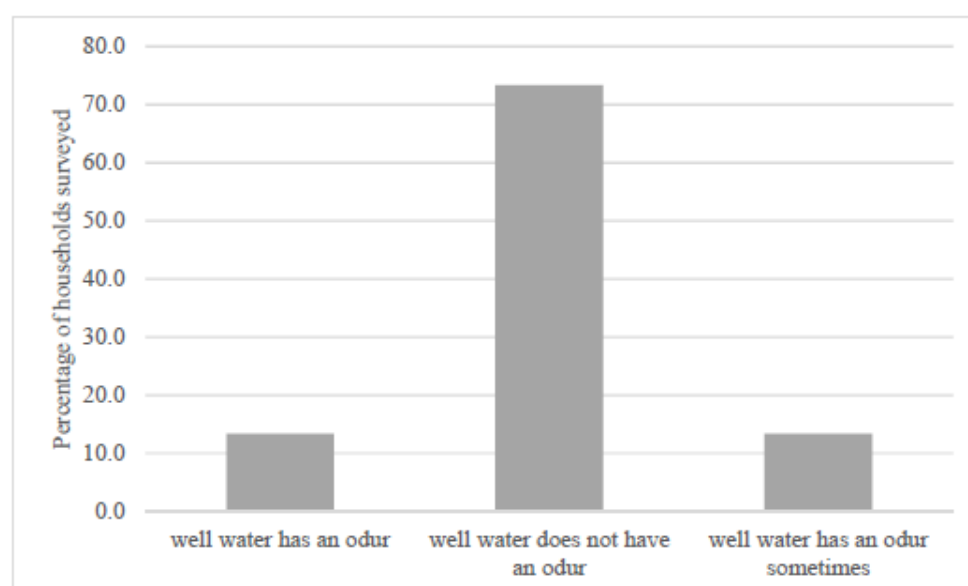


Figure 125: Quality of groundwater at the households

## 8) L. Maavah

### 3.9.4 Groundwater (well water)

At Maavah, 52.0 % of households stated that the groundwater available for consumption at their households wells are not safe to consumption. Table 47 shows that 48.0 % of the households stated that they do not feel it is safe to use groundwater for non-portable use at the households. (see Table 7).

Islands	Is Well Water Safe as percentage of households		
	Yes	No	Not Stated
L.Maavah	52.0	48.0	0.0

Table 47: Household perception on the safety of the groundwater for their consumption. (Source: Population and Housing Census 2014)

### 3.9.11 Quality of Groundwater at Households

55.0 % of the households stated that the groundwater from the household wells did not had any odour. 7.5 % of the surveyed households stated they had an odour from their groundwater wells sometimes. While 37.5 % of the households stated that the water from their wells had a smell. (See Figure 109).

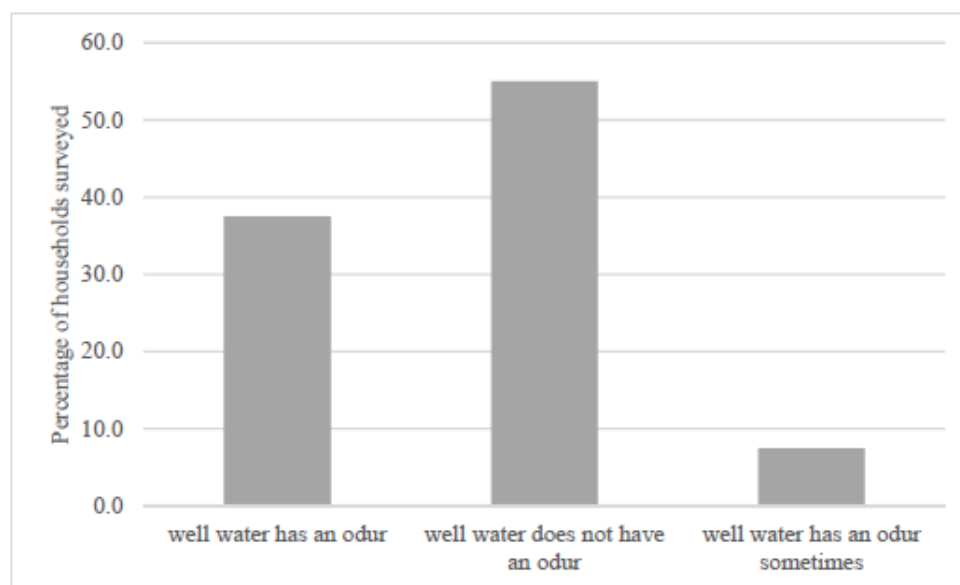


Figure 138: Quality of groundwater at the households

Figure 139, Figure 140 and Figure 141 shows the contour maps of the groundwater tested from the households where household questionnaire was undertaken.



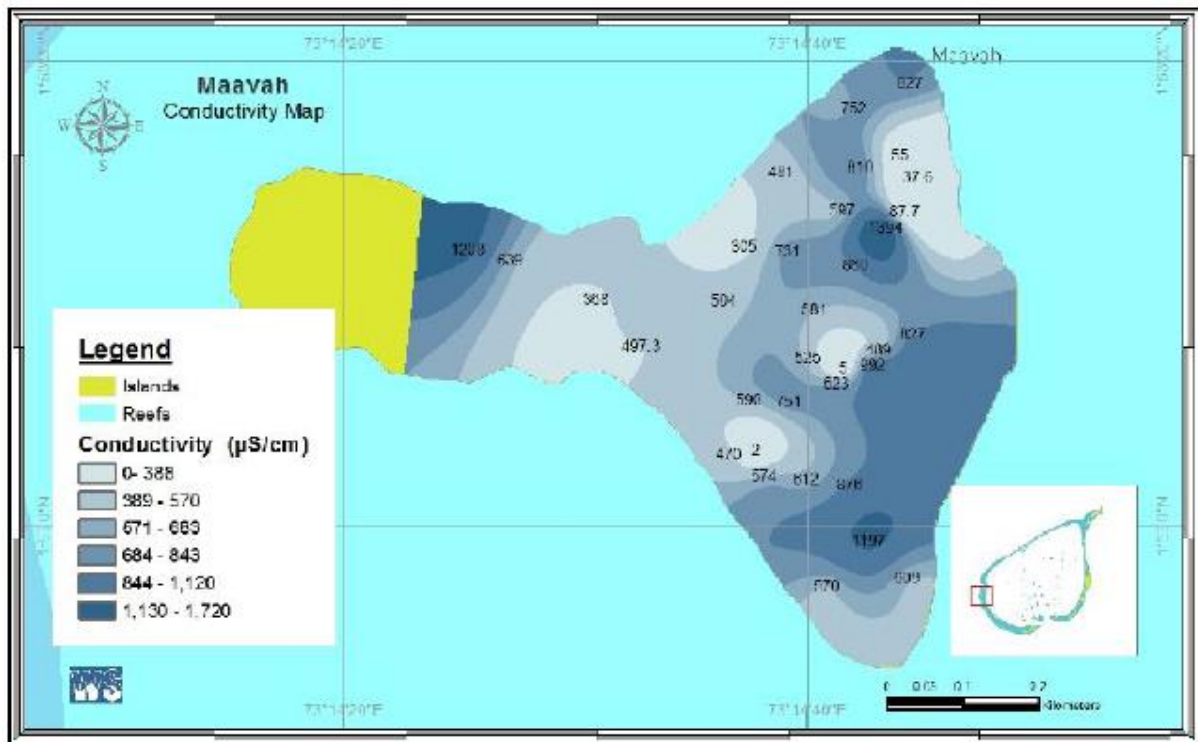


Figure 139: Conductivity map of the groundwater tested from surveyed households

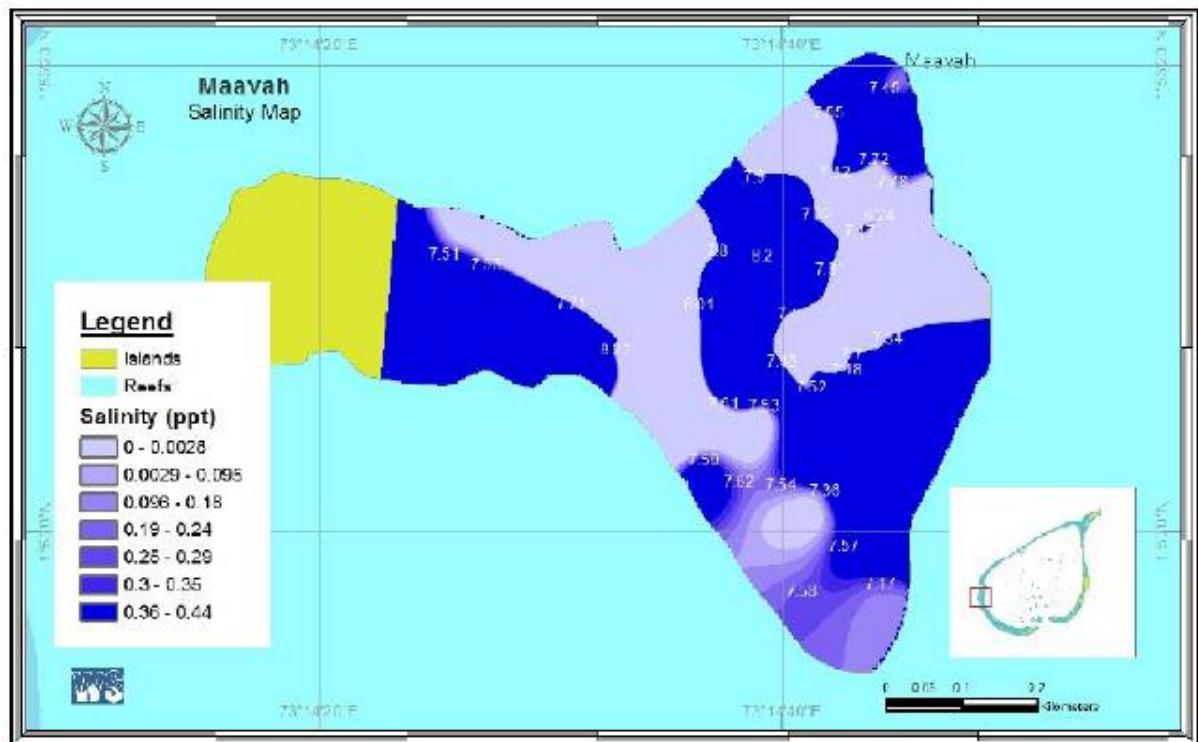


Figure 140: Salinity map of the groundwater tested from surveyed households

The pH measurement from households showed that the groundwater of the island is mostly acidic except from few houses which were located at the centre of the island, where the pH level of the ground water was lower than pH 7.5. The pH level of ground water at island showed variation of its value from neutral level (pH 7.5) from acidic level to alkaline level (see Figure 141).

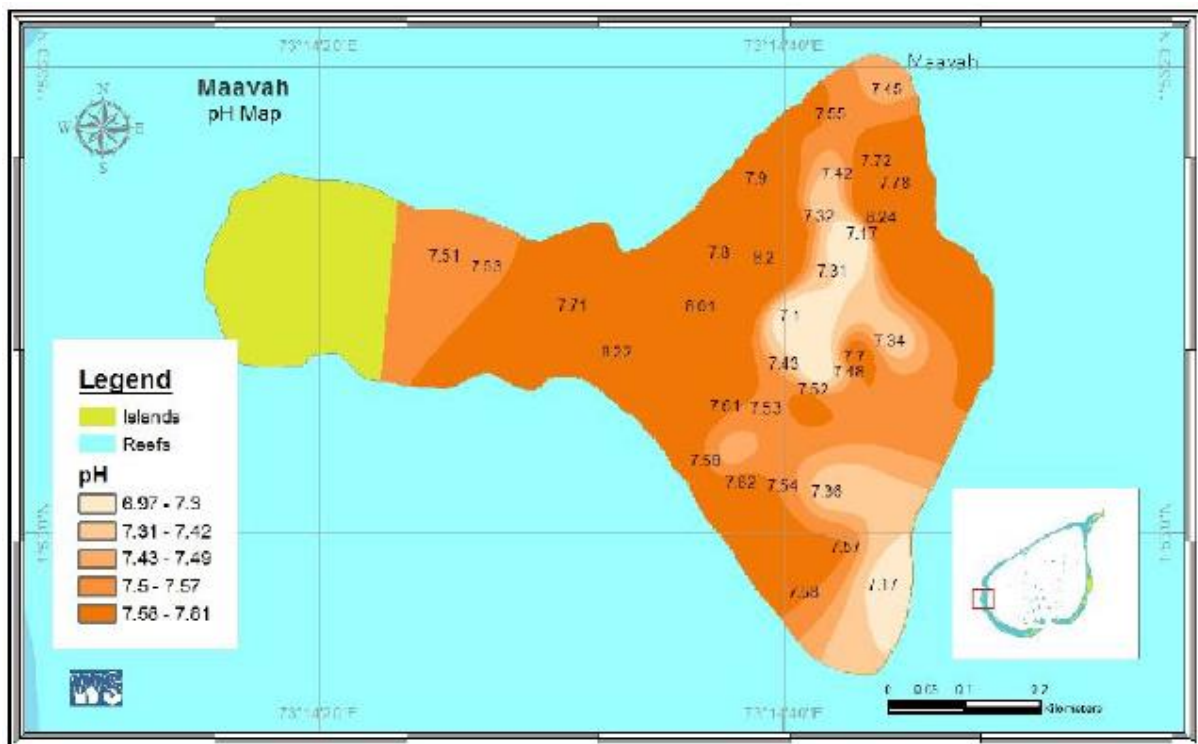


Figure 141: pH map of the groundwater tested from surveyed households

## 9) L. Maamendhoo

### 3.10.4 Groundwater (well water)

At Maamendhoo, 91.2 % of households stated that the groundwater available for consumption at their household wells are safe to use. Table 52 shows that 14.1% of the households stated that they do not feel it is safe to use ground water for non-portable use at the households.

Islands	Is Well Water Safe as percentage of households		
	Yes	No	Not Stated
L.Maamendhoo	91.2	7.7	1.1

Table 52: Household perception on the safety of the groundwater for their consumption. (Source: Population and Housing Census 2014)

### 3.10.11 Quality of Groundwater at Households

65.2 % of the households stated that the groundwater from the household wells did not had any odour. 8.7 % of the surveyed households stated they had an odour from their groundwater wells sometimes. While 26.1 % of the households stated that the water from their wells had a smell. (See Figure 109).

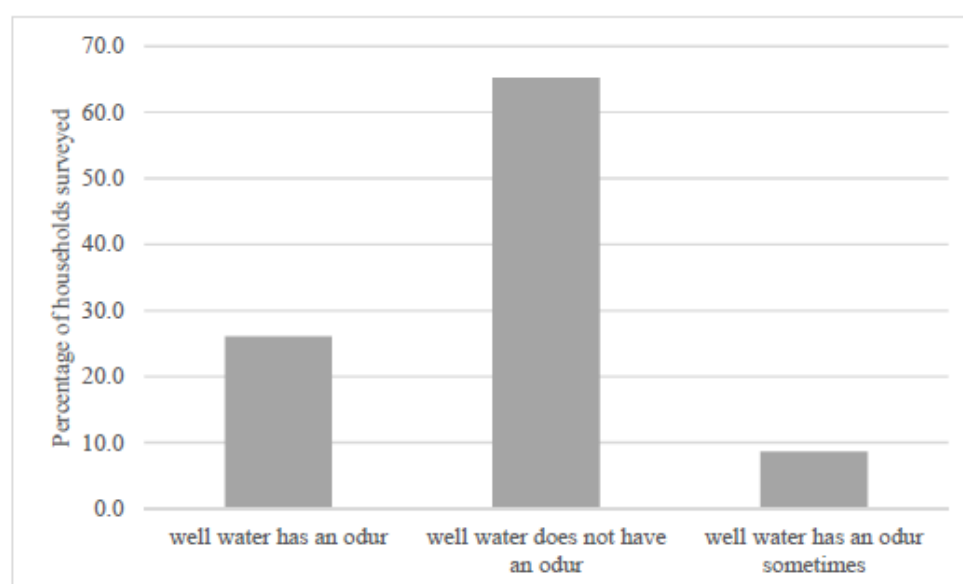


Figure 154: Quality of groundwater at the households

Figure 155, Figure 156 and Figure 157 shows the contour maps of the groundwater tested from the households where household questionnaire was undertaken.

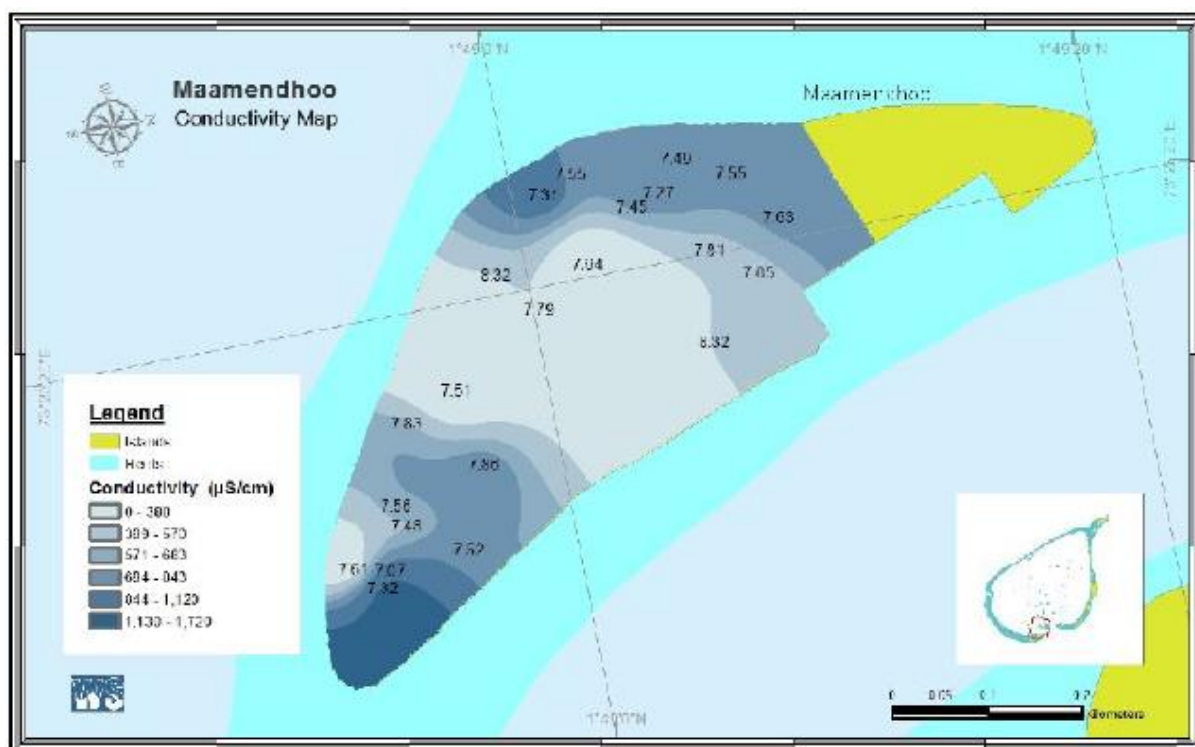


Figure 155: Conductivity map of the groundwater tested from surveyed households

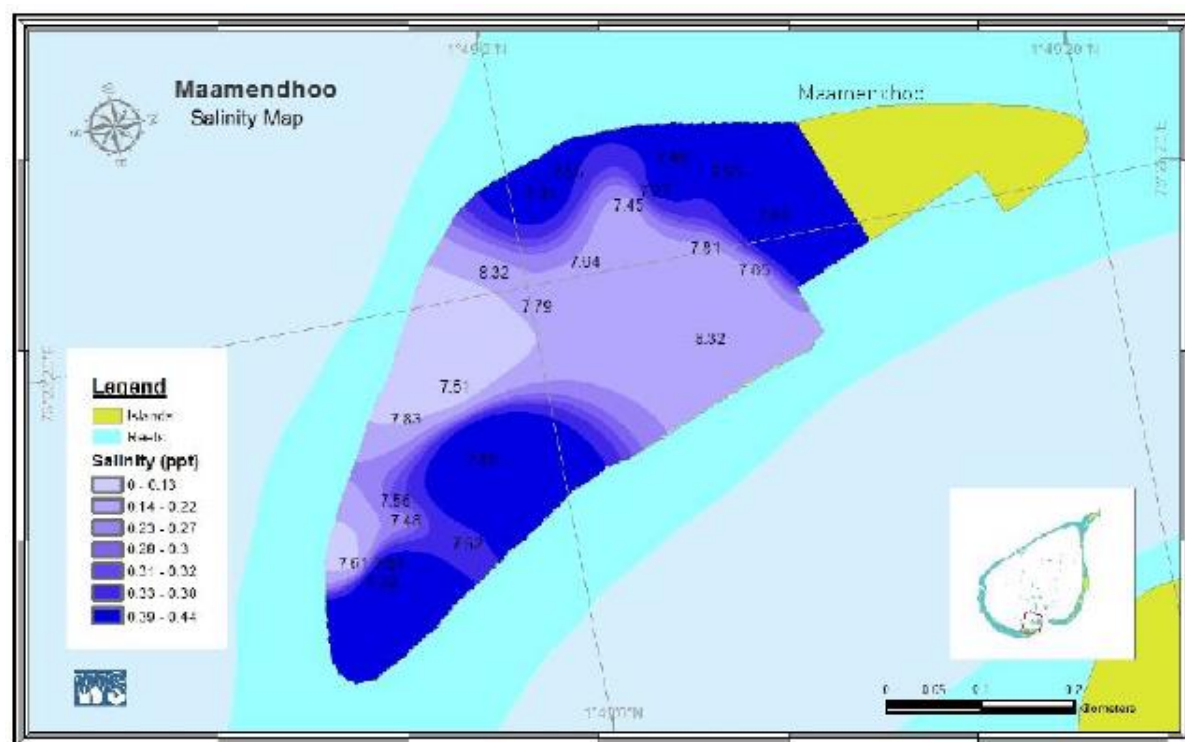


Figure 156: Salinity map of the groundwater tested from surveyed households

The pH measurement from households showed that the groundwater of the island is mostly alkaline except from few houses which were located at the centre of the island and south eastern side of the island, where the pH level of the ground water was lower than pH 7.5. The pH level of ground water at island showed variation of its value from neutral level (pH 7.5) from acidic level to alkaline level (see Figure 157).



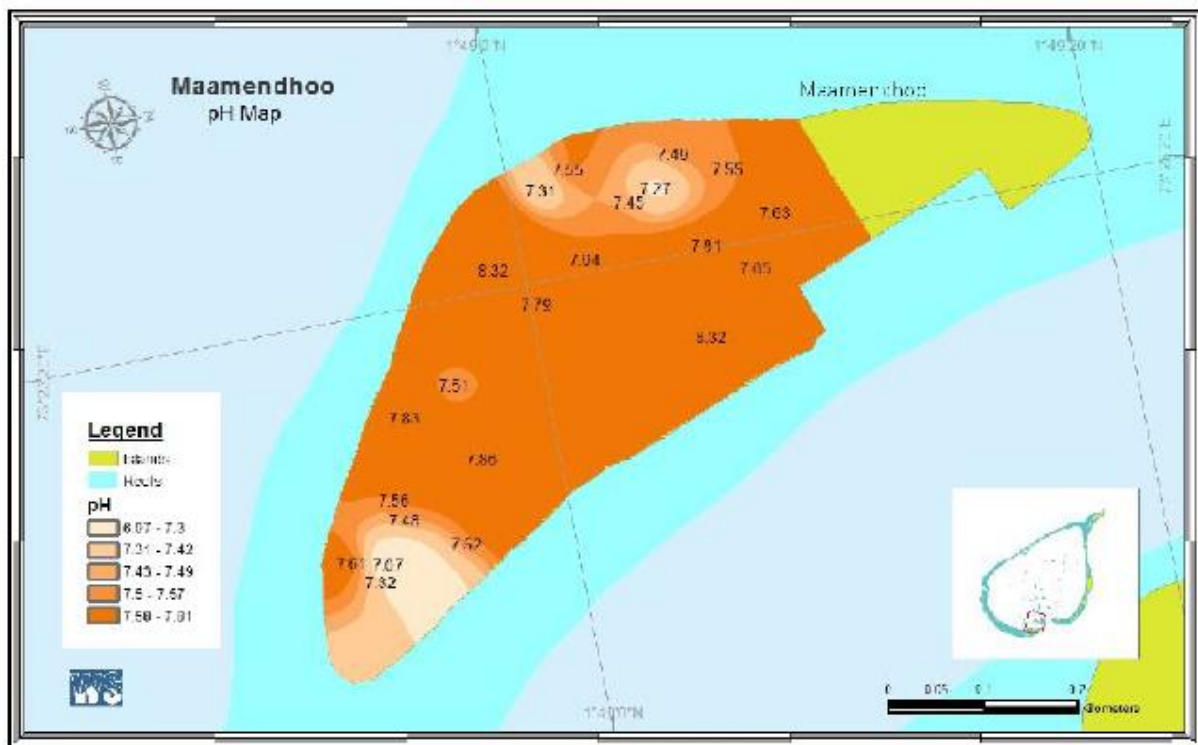


Figure 157: pH map of the groundwater tested from surveyed households