

BELOW THE RADAR

A case study of Coastal Aquaculture Hatcheries in Chengalpattu and Villupuram Districts, Tamilnadu



**COASTAL RESOURCE CENTRE
DECEMBER 2020**

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Cover Photo: Saravanan K

INTRODUCTION

Seafood currently provides almost one-fifth of the total animal protein supply to millions around the world. The importance of fish to food supplies is even greater in many countries in the Asia-Pacific region, including India.¹ Small-scale fishers in developing countries live in or at the brink of poverty. Access to affordable seafood is critical to their nutritional security. Small-scale fishing communities face a wide range of challenges, broadly caused by 'coastal grabs' where fishing livelihood spaces and resources are appropriated by outside interests². Among these, one of the emerging threats to coastal commons and fisher livelihoods has been the emergence and diversification of the coastal industrial aquaculture, including **hatcheries** that produce seeds and farms that cultivate populations under controlled conditions.

Amidst a declining state of capture fisheries, the spectre of food insecurity has been used as a ruse to push for other means of seafood production such as aquaculture. The Food and Agriculture Organisation (FAO), in 2009 said, "Vast majority of the world's wild fish stocks either are being [overexploited](#) or have reached their maximum productive capacity", adding that "that growth in the global [aquaculture industry](#) is largely making up the difference and seems poised to overtake capture fishing as the world's leading source of seafood."³ The Ministry of Fisheries, Animal Husbandry and Dairying, Government of India, under its flagship mission "Blue Revolution: Integrated Development and Management of Fisheries"⁴ and the Pradhan Mantri Masthya Sampada Yojana (PMMSY⁵) has begun focusing on developing fisheries production and productivity from aquaculture - both inland and marine.

However, coastal aquaculture has not benefited coastal communities in any manner. They require investments beyond the capacity of artisanal fishers. They do not generate any significant employment. And because their produce is destined for distant markets, they do not address the nutritional needs of local communities.

While some attention has been paid to the conflicts between coastal residents and shrimp aquaculture units, shrimp hatcheries have hardly attracted any attention despite their location in and intrusion into ecologically sensitive areas including inter-tidal zones.

This report documents the nature and extent of violations in industry siting by aquaculture shrimp hatcheries in two districts on Tamil Nadu's coast - Chengalpattu and Villupuram in Tamilnadu and demonstrates the lack of a regulatory framework under statutory legal provisions, with special focus on the Coastal Regulation Zone Notification 2011.

PROCESS OF AQUACULTURE



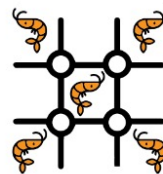
BROODSTOCK

Mature individuals for breeding/ spawning



FERTILIZATION

The broodstock fertilize and lay eggs/ larvae



SEED PRODUCTION

The larva / spawn laid by the broodstock is cultured in hatcheries to attain a particular size



FARMS

This seed is then sold to farms, where they are hosted in a conducive environment until adult size is reached



VENDORS

Once adult size has been attained, they are sold to vendors who market the shrimp

Coastal Resource Centre (2020)

REGULATORY FRAMEWORK FOR SITING OF COASTAL AQUACULTURE HATCHERIES

The Coastal Regulation Zone Notification, 2011 regulates all activities within the designated “Coastal Regulation Zone” i.e - areas within 500m of the High Tide Line. The setting up of industries – both small and large scale, construction of buildings and other facilities, laying pipelines for water intake and effluent outfalls are all activities that are appraised under the CRZ Notification.

Although the CRZ Notification 2011 lists hatcheries as an activity permitted within certain permissible zones of the CRZ, subject to prior appraisal and recommendation from the State’s Coastal Zone Management Authority (SCZMA) and clearance from statutory authority.

The coastal aquaculture industry is also specifically regulated by the *Coastal Aquaculture Authority Act 2005*. Rules framed under this Act prohibit the setting up of all coastal aquaculture facilities, including hatcheries, within 200m of the High Tide Line in coastal areas. Any aquaculture activities beyond 200m of the High Tide Line requires statutory licenses from the Coastal Aquaculture Authority.

Water (Prevention and Control of Pollution) Act 1974 and Air (Prevention and Control of Pollution Act) 1981 lays down the mandate of preventing and controlling pollution of waterways, water bodies including the seas on the State Pollution Control Board. All industries and activities with significant emissions to air and water are required to obtain separate Consents to Establish and Operate. Hatcheries are green category industries that are covered under consent management for obtaining prior consent to establish (CTE) and consent to operate (CTO) under Water and Air Acts from the State Pollution Control Board.⁶

METHODOLOGY : SAMPLE SURVEY OF COASTAL AQUACULTURE HATCHERIES

In an attempt to enumerate the extent of unregulated aquaculture hatcheries on the coast, The Coastal Resource Centre undertook two rapid surveys of two coastal districts in Tamil Nadu – Chengalpattu and Villupuram, covering a total of 130 kilometres of the coast.

The surveys were carried out between the months of December 2019 and December 2020 to enumerate coastal aquaculture hatcheries operational within the Coastal Regulation Zone (CRZ) areas. The following criteria was followed.

1. Coastline of Chengalpattu District and Villupuram District was demarcated and the survey coastline within the CRZ was ascertained.
2. The coastal stretch near Palar River Estuary and the Kalpakkam Atomic Power Station were not surveyed owing to logistical and security constraints.
3. A total of 4 surveyors carried out the field identification of aquaculture hatcheries that were under construction and operational. Two surveyors carried out the survey on the coastline close to the water line, and two surveyors travelled along the East Coast Road to identify aquaculture hatcheries. Table 1 contains details of the survey. Intelligence on the presence of aquaculture hatcheries was also obtained from local fisherfolk in various fishing villages in Chengalpattu and Villupuram districts.
4. After identifying hatcheries, GPS Locations of surveyed hatcheries was obtained and assessed for **legality in siting** as per statutory legal provisions -

a) Siting compliance under **CRZ Notification 2011** was ascertained using the Approved Coastal Zone Management Plan prepared and approved under CRZ Notification 2011.

- Hatcheries present within non permissible areas such as “No Development Zones (NDZ)” or CRZ I-A & I-B Zones were taken to be violations.
- Hatcheries present in Permissible areas such as CRZ-II and beyond NDZ in CRZ III areas were cross checked with Tamilnadu State Coastal Zone Management Authority for prior permission/ recommendation (via Meeting Minutes⁷ of the TNSCZMA and Under RTI {Annexure 1}).

b) Siting Compliance under Coastal Aquaculture Authority was ascertained using section 13(8) of the Coastal Aquaculture Authority Act, 2005 that prohibits carrying out coastal aquaculture within 200m of the High Tide Lines.⁸ All hatcheries present within 200m from the high tide line were taken to be in violation of the Coastal Aquaculture Authority Act, 2005.

c) Compliance under Water (Prevention and Control of Pollution) Act 1974 and Air (Prevention and Control of Pollution Act) 1981 was ascertained by checking the Online

Consent Management and Monitoring System if Consent to Establish and Consent to Operate has been obtained from the Tamilnadu Pollution Control Board. All hatcheries that did not display a valid consent to establish and consent to operate were taken to be in violation of the Water (Prevention and Control of Pollution) Act 1974 and Air (Prevention and Control of Pollution Act.

STUDY AREA

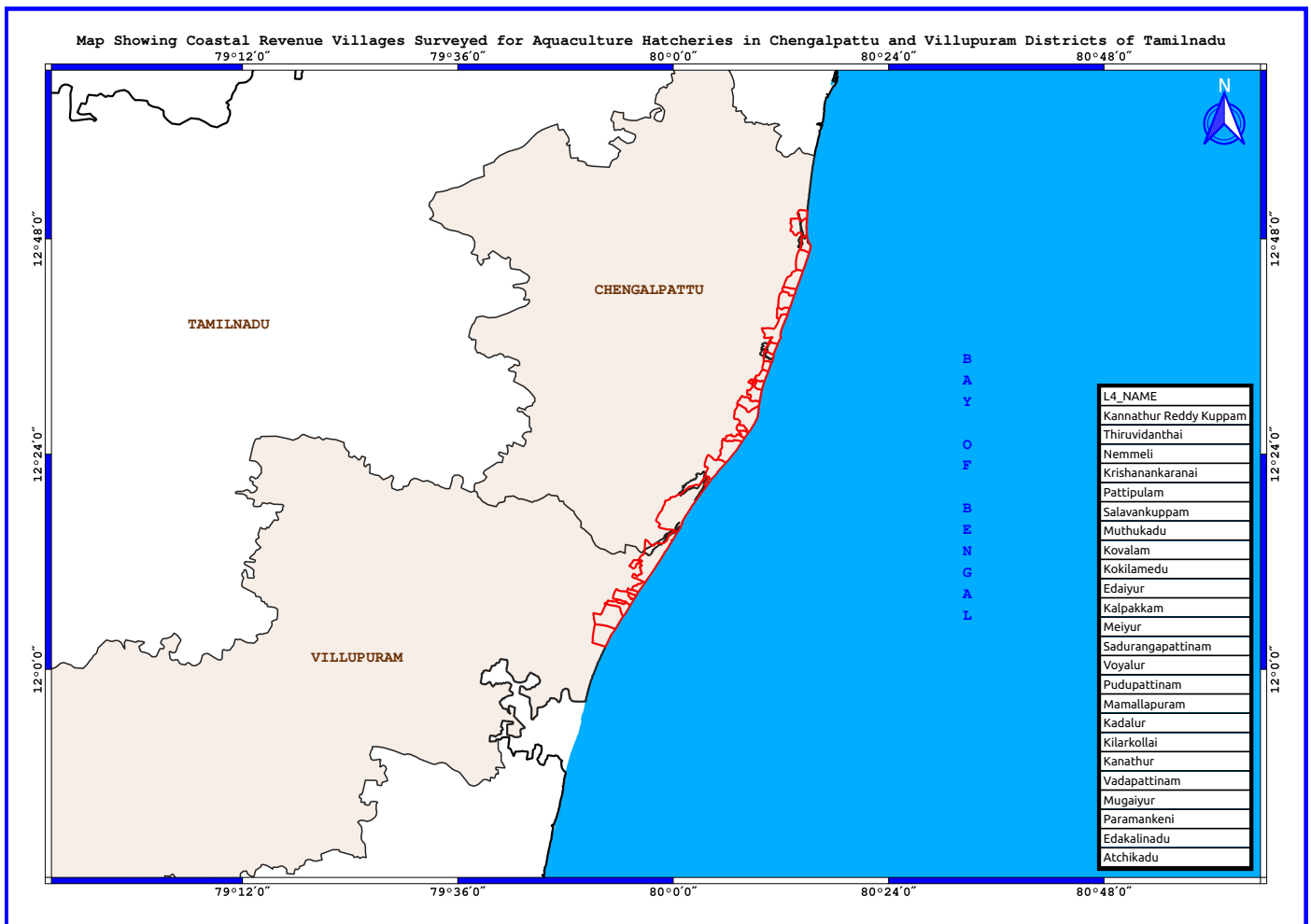


Table 1

District	Chengalpattu	Villupuram
Coastal length in Kilometres	87.2km	40.7km
Revenue villages surveyed	<p>Chengalpattu Taluk</p> <ol style="list-style-type: none"> 1. Kanathur 2. Muttukkadu 3. Kovalam 4. Thiruvidadanthai 5. Nemmeli 6. Krishanankaranai 7. Pattipulam 8. Salavankuppam <p>Cheyyur Taluk</p> <ol style="list-style-type: none"> 1. Kadalur 2. Kanathur 3. Vadapattinam 4. Mugaiyur 5. Paramankeni 6. Panaiyur 	<p>Tindivanam Taluk</p> <ol style="list-style-type: none"> 1. Marakkanam (TP) 2. Atchikadu 3. Panichamedu 4. Kilpettai 5. Anumandai 6. Chettikuppam 7. Kunimedu 8. Kilpudupatti
Categories of CRZ Zones where Hatcheries were identified	CRZ I A - Sand Dunes CRZ III – No Development Zone	CRZ I A - Sand Dunes CRZ III – No Development Zone CRZ II - Urban Areas
Total Number of hatcheries surveyed	65	

RESULTS AND CONCLUSIONS

A total of 65 hatcheries were identified as constructed and operational within the Coastal Regulation Zone. Table 2 in Annexure 2 and Maps in Annexure 3 contains details of the hatcheries, the GPS location and CRZ Zones.

- 62 of the 65 hatcheries were operational within 200m of the HTL in violation of the provisions in the Coastal Aquaculture Authority Act 2005.
- None of the 65 hatcheries has a valid Consent to Establish or Operate under Water & Air Acts.
- None of the 65 hatcheries was appraised or granted clearance under the CRZ Notification 2011. The hatcheries have been constructed and are operating in violation of the CRZ Notification 2011. (Response under Right to Information Act 2005 from TNSCZMA attached as Annexure 1)
 - 51 of the 65 hatcheries are operating without CRZ clearance within "No Development Zone" or "NDZ" in CRZ (within 200m from HTL in CRZ III areas). Hatcheries are not a permitted activity in this zone under CRZ Notification 2011.
 - 4 hatcheries are operating without CRZ clearance and within ecologically sensitive CRZ 1-A areas (Sand dunes). Hatcheries are not a permitted activity in this zone.
 - 9 hatcheries are operating within CRZ II areas. Hatcheries are a permitted activity in this region provided they obtain prior permission from the state CZMA. However, none of the nine hatcheries has a valid permission from the TNSCZMA.
 - 3 hatcheries are operating in CRZ III areas beyond the No Development Zone (NDZ). Hatcheries are a permitted activity in this region, but require prior permission from the state CZMA. None of the three hatcheries has a valid permission from the TNSCZMA.

IMPACTS OF UNREGULATED CONSTRUCTION AND OPERATION OF COASTAL AQUACULTURE HATCHERIES



Discharge of chemical effluent in the intertidal zone, impacting the natural state of this fragile area.

Effluent water from a hatchery in Chengalpattu district being released into ecologically sensitive intertidal CRZ areas. Such discharge was observed in many hatcheries along the surveyed coastline. Aquaculture effluent usually contains pharmaceutical waste as medicines are used to prevent infections in the cultured animals. Untreated effluent mixed with chemicals when discharged into intertidal areas affects the health of intertidal life and pollutes near shore waters and inturn marine life.v

Photo: Saravanan K



Change in land use of coastal areas - Including alteration of natural features of the coastline like sand dunes.

Hatcheries have raised concrete compound walls on Sand Dunes, classified as CRZ I-A Ecologically Sensitive Areas. Sand dunes act as a barrier between the sea and the land and also protects the ground water from salinity intrusion by acting as a sponge. Building on sand dunes also greatly affects the dynamic nature of coastal sand dunes that change with wind, wave climate and sea level. Such construction is bound to hamper with sand movement and induce salinity intrusion into the groundwater in nearby areas.

Photo: Saravanan K



Diversion of traditional land uses and livelihood spaces for commercial/industrial use with no impact assessment on environment or socio-economics of small scale fishing communities.

In many locations, hatcheries have constructed rudimentary “bridges” that carry effluent pipelines into the nearshore waters and intertidal areas. Multiple such structures can be found originating from hatcheries along the coastline surveyed. This greatly affects local fisherfolk as intertidal areas used for hauling shore seines are disrupted, boat landing, fish drying areas are also appropriated illegally. It is said that these structures also hamper the formation of the beach berm during monsoon seasons, exposing fisher property to hazards from the sea during cyclones and other weather events.

Photo: Saravanan K



Dumping of chemical waste and bio-medical waste on coastal areas including sand dunes and intertidal areas.

Plastic and Pharmaceutical waste can be seen strewn on the coastal areas, including sand dunes, intertidal areas that eventually end up as marine plastic. Large scale disposal of pharmaceutical waste is bound to have an impact on local ecology. Plastic waste can get carried from one place to another, harming water and land.

Photo: Saravanan K

RECOMMENDATIONS TO THE GOVERNMENT OF TAMILNADU

- Detailed survey of all aquaculture hatcheries along all coastal districts in Tamilnadu must be undertaken and compliance to CRZ Notification 2011, Coastal Aquaculture Authority Act 2005 and Water and Air Acts of all hatcheries along TN coast must be verified.
- CRZ violations must be identified and action taken against offenders.
- Hatcheries in violation of the CRZ Notification 2011 must be removed by the Tamilnadu State Coastal Zone Management Authority.
- Take action under Coastal Aquaculture Authority Act 2005 and Water and Air Acts by respective authority including demolition of illegally located units, restoration of ecology and natural state of the area.
- Effect on small scale fisheries must be studied and appropriate compensation must be awarded.
- Stop all effluent discharge and groundwater drawl in coastal areas
- Ensure proper regulatory oversight of aquaculture units, and that only units with valid permissions under the various acts are allowed to set up and operate.

ANNEXE - 1; RTI - TNSCZMA REGARDING APPRAISAL OF AND CLEARANCE GIVEN TO COASTAL AQUACULTURE HATCHERIES

To,
The Public Information Officer
Tamilnadu Coastal Zone Management Authority
Ground Floor, Pangal Maligai
Saidapet
Chennai 600035



Date: 12th August 2019

Subject: CRZ Clearance Given to Coastal Aquaculture Farms Between 1991 to 2005

Sir/Madam,

1. Has TNSCZMA given CRZ Clearance Coastal Aquaculture Farms Between 1991 to 2005?
2. If yes, Please provide copies of applications of CRZ Clearance received from aquaculture companies for setting up aquaculture farms in CRZ areas between 1991 to 2005 with all annexures
3. Please provide copies of CRZ clearances issued to aquaculture companies for setting up of aquaculture farms in CRZ areas between 1991 to 2005
4. Has there been any office memorandums/ internal policy circulars issued regarding issue of CRZ clearance for aquaculture farms by the TNSCZMA?
5. If yes, please provide relevant copies
6. Have there been any meetings held where issue of CRZ clearance for aquaculture farms have been discussed?
7. If yes, provide copies of minutes of such meetings
8. Under Section 2(j) of RTI Act, 2005 please provide suitable date and time for inspection of files

If any of the above documents are available as soft copies, please provide them as soft copies

Please find attached Rs.10 in court fee stamp as RTI Application fee

Thank you,

Pooja Kumar
92, 3rd Cross Street
Thiruvalluvar Nagar
Besant Nagar
Chennai 600090

Department of Environment

From
Tmt. S. Usha,
Dy. Director I/c,
Public Information officer
Department of Environment
Ground floor, Panagal Building,
Saidapet, Chennai-15
Phone no: 044-2433 6421
E-Mail: tndoe@tn.nic.in

To
Ms. Pooja Kumar,
No.92, 3rd cross street,
Thiruvalluvar Nagar,
Besent Nagar,
Chennai-600 090

Rc.No. P1/2219/2019/2019 Dated: 09.09.2019

Sir/Madam,

Sub: DoE, Chennai-15-Details sought under Right to Information Act-2005-
Information pertaining to CRZ, clearance given to coastal Aquaculture
Hatcheries between 1991 to 2005- Regarding.
Ref: RTI Application of MS. Pooja Kumar, No.92, 3rd cross street, Thiruvalluvar
Nagar, Besent Nagar, Chennai-600 090 dated: 12.08.2019

With reference to the RTI application, the following details are
furnished herewith.

For Query No. 1-----No

For Query No. 2-----Nil

For Query No. 3-----No

For Query No. 4-----No

For Query No. 5-----Nil

For Query No. 6-----No

For Query No. 7-----Nil

For Query No. 8-----No related file is available and hence inspection of files ^{does} ~~has~~ not
arisen.

S. Usha
10/9/19
Public Information officer
Department of Environment

10/9/2019

To,
The Public Information Officer
Tamilnadu Coastal Zone Management Authority
Ground Floor, Pangal Maligai
Saidapet
Chennai 600035



Date: 24/01/2020

Subject: CRZ Clearance Given to Coastal Aquaculture Hatcheries Between 2005 to 2019

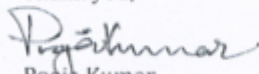
Sir/Madam,

1. Has TNSCZMA given CRZ Clearance Coastal Aquaculture hatcheries between 2005 and 2019?
2. If yes, Please provide copies of applications of CRZ Clearance received from aquaculture companies for setting up aquaculture farms in CRZ areas between 2005 and 2019 with all annexures
3. Please provide copies of CRZ clearances issued to aquaculture companies for setting up of aquaculture hatcheries in CRZ areas between 2005 and 2019
4. Has there been any office memorandums/ internal policy circulars issued regarding issue of CRZ clearance for aquaculture hatcheries by the TNSCZMA?
5. If yes, please provide relevant copies
6. Have there been any meetings held where issue of CRZ clearance for aquaculture hatcheries have been discussed?
7. If yes, provide copies of minutes of such meetings
8. Under Section 2(J) of RTI Act, 2005 please provide suitable date and time for inspection of files.

If any of the above documents are available as soft copies, please provide them as soft copies

Please find attached Rs.10 in court fee stamp as RTI Application fee

Thank you,


Pooja Kumar
92, 3rd Cross Street
Thiruvalluvar Nagar
Besant Nagar
Chennai 600090



BY ROAD

DEPARTMENT OF ENVIRONMENT

From
Thiru K.B. Rajendran,
Accounts Officer /
Public Information Officer,
Department of Environment,
Ground Floor, Panagal Buildings,
Saidapet, Chennai-600 015
Phone : 044 - 24336421,
E.Mail : tndoe@tn.nic.in
Website : www.environment.tn.gov.in

To
Ms. Pooja Kumar,
No. 92, 3rd cross Street,
Thiruvalluvar Nagar,
Besant Nagar, Chennai -90

R.C No P1 / 231 / 2020 dated 20.02.2020

Sir/Madam,

Sub.: DoE - Details sought under Right to Information Act 2005 -
Information pertaining to CRZ Clearance given to Coastal Aquaculture
Hatcheries between 2005 and 2009 - Regarding.

Ref.: RTI Application of Ms. Pooja Kumar, No.92, 3rd Cross Street,
Thiruvalluvar Nagar, Besant Nagar, Chennai.90 dated Nil received on
27.01.2020

With reference to the RTI application, the following details are furnished
hereunder, based on the available records in this office.

- For Query No.1 : No. The TNSCZMA have not given CRZ Clearance for
Coastal Aquaculture Hatcheries between 2005 and
2019.
- For Query No.2 : Not arisen
- For Query No.3 : Not arisen
- For Query No.4 : The TNSCZMA have not issued any office
memorandum / internal policy circulars regarding issue
of CRZ Clearance for aquaculture hatcheries.
- For Query No.5 : Not arisen
- For Query No.6 : No meeting was held on the issue of CRZ Clearance by
the TNSCZMA to the aquaculture hatcheries.
- For Query No.7 : Not arisen
- For Query No.8 : Not arisen


Public Information Officer



ANNEXE - 2 ; TABLE - 2

Details of Coastal Aquaculture Hatcheries Surveyed					
S.NO	Name	Longitude	Latitude	CRZ zone	Distance from HTL in meters
1	SUNDAR MARINES	80.24877199	12.85314389	CRZ III Zone - No Development zone	17.84
2	K R HATCHERY	80.2487175	12.85219305	CRZ III Zone - No Development zone	3.96
3	BMR CLASWIN HARCHERIES	80.24745398	12.83530633	CRZ III Zone - No Development zone	31.44
4	RAJ HATCHERY	80.24680815	12.80094214	CRZ III Zone - No Development zone	53.43
5	HAISUN	80.22819869	12.70857699	CRZ III Zone - No Development Zone	65.00
6	SEVEN STAR	80.2275594	12.70690519	CRZ III Zone - No Development Zone	64.00
7	SRI VINAYAGA HATCHERY	80.25301462	12.77674011	CRZ III Zone - No Development zone	15.97
8	LOTUS SEA FARMS (HATCHERY)	80.22283941	12.69118037	CRZ III Zone - No Development zone	7.89

9	MATHA HATCHERY	80.22140876	12.68797109	CRZ III Zone - No Development zone	22.55
10	KRISHNA HATCHERY	80.20920169	12.65362279	CRZ III Zone - No Development zone	19.34
11	NSR HATCHERY	80.20818670	12.65306734	CRZ III Zone - No Development zone	103.00
12	MK HATCHERY	80.14464424	12.44839291	CRZ III Zone - No Development zone	17.00
13	ADILAKSHMI HATCHERY	80.143119596	12.44676009	CRZ III Zone - No Development zone	48.00
14	SIRADI SAI HATCHERY	80.1303917	12.42852813	CRZ III Zone - No Development zone	44.61
15	ROYAL HATCHERIES	80.13026777	12.42783715	CRZ III Zone - No Development zone	12.57
16	STAR HATCHERY	80.12806507	12.42471379	CRZ III Zone - No Development zone	15.1
17	VSR SHRIMP HATCHERY	80.12686616	12.4231493	CRZ III Zone - No Development zone	32.13
18	GROBEST HATCHERY	80.1219097	12.41605919	CRZ III Zone - No Development zone	37.57

19	HI BREEDS AQUATICS	80.10333333	12.39138889	CRZ III Zone - No Development zone	44.69
20	SUN GLOW MARINE	80.10086108	12.38984259	CRZ III Zone - No Development zone	133.55
21	NO NAME - UNDER CONSTRUCTI ON	80.13221420	12.70690519	CRZ III Zone - No Development zone	132.00
22	SAAGHAR HATCHERY	80.13168373	12.43020267	CRZ III Zone - No Development zone	31.00
23	SUN SHINE MARINE	80.1013568	12.38920803	CRZ III Zone - No Development zone	46.49
24	VISHAL MARINE HATCHERY	80.10067949	12.38914979	CRZ III Zone - No Development zone	100.42
25	G K BIO MARINE SHRIMP HATCHERY	80.1009871	12.38873545	CRZ III Zone - No Development zone	44.95
26	GOLDEN MARINE HARVEST	80.10035428	12.38806734	CRZ III Zone - No Development zone	49.7
27	SUN RAYSS MARINE	80.09987815	12.38747783	CRZ III Zone - No Development zone	46.98
28	GRACE HATCHERIES	80.09926928	12.38670723	CRZ III Zone - No Development zone	45.87

29	BMR CLASWIN HATCHERIES	80.09149772	12.37817967	CRZ III Zone - No Development zone	53.6
30	M STAR AQUA TECH HATCHERY	80.09105567	12.37789628	CRZ III Zone - No Development zone	67.87
31	STAR AQUA HATCHERY	80.09056438	12.37681674	CRZ III Zone - No Development zone	27.7
32	SUDITH SHRIMP HATCHERY	80.08932004	12.37541623	CRZ III Zone - No Development zone	35.08
33	VAISHALI PRAWN HATCHERY	80.0884055	12.37471605	CRZ III Zone - No Development zone	54.67
34	JAY JAY GOLD SHRIMP HATCHERY	80.03610734	12.30705942	CRZ III Zone - No Development zone	64.38
35	SHENG LONG BIO TECH INDIA PRIVATE LIMITED	80.02020299	12.28026311	CRZ IA Zone & CRZ III Zone - No Development zone,	33.13
36	BASS HARCHERY	79.99817452	12.23966627	CRZ II Zone	18.53
37	SHIRMPS INDIA	79.99763709	12.23885713	CRZ II Zone	17.79
38	BBC SHRIMP HATCHERIES	79.99591195	12.23599891	CRZ II Zone	23.49
39	PAVANI HATCHERY	79.98916527	12.22511357	CRZ II Zone	16.79
40	LOTUS PRAWN HATCHERIES	79.98867444	12.2243903	CRZ II Zone	16.88

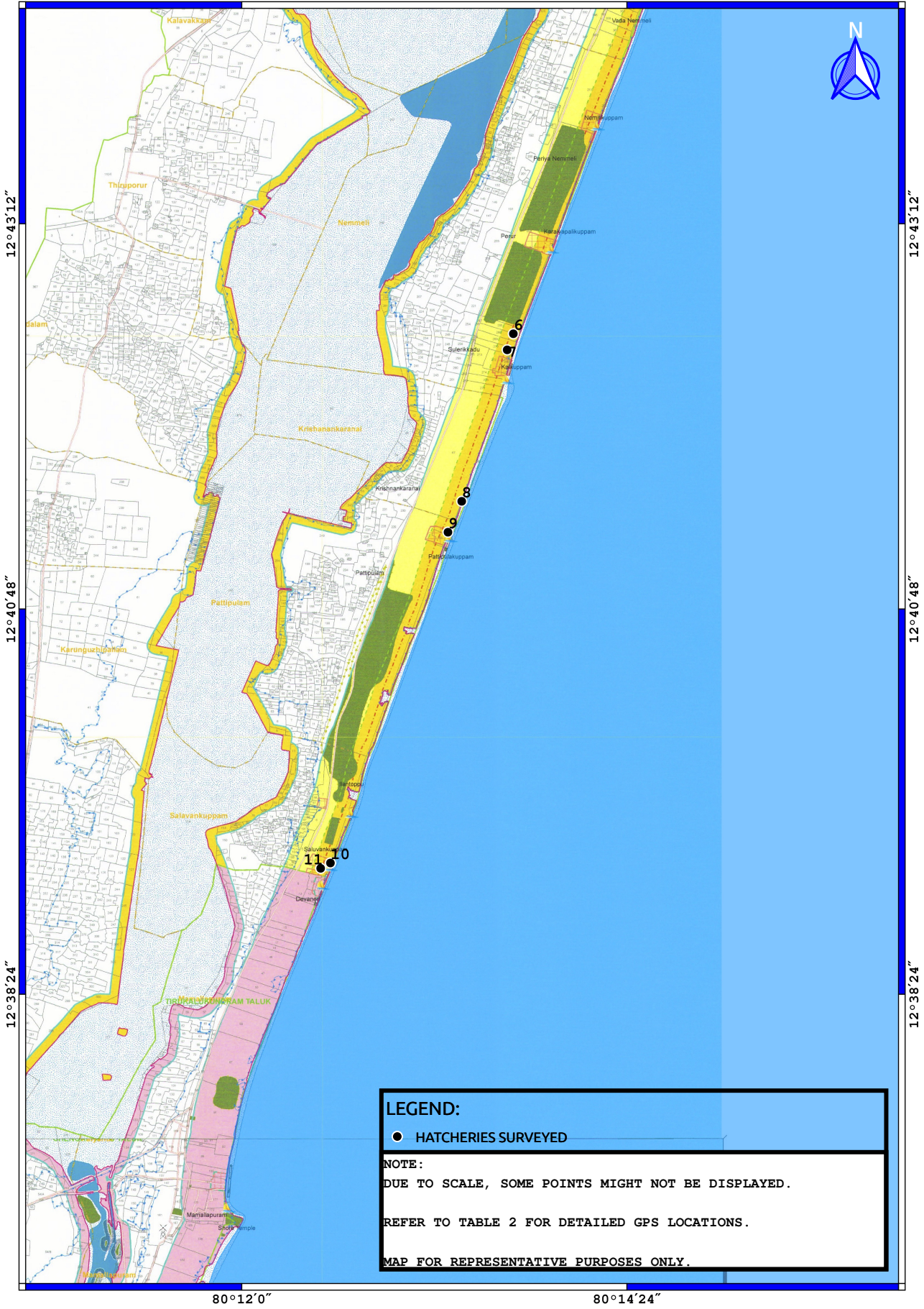
41	VAISAKTHI BIOMARINE PRIVATE LIMITED	79.98134848	12.21371619	CRZ II Zone	26.55
42	BMR CLASWIN HATCHERIES	79.97009738	12.19539519	CRZ II Zone	7.16
43	VICTORY HATCHERY	79.96188174	12.18572515	CRZ IA Zone (SD)	167.36
44	CALYPSO AQUA TECH PVT LIMITED SHRIMP HATCHERY	79.96337216	12.18551253	CRZ IA Zone (SD)	15.61
45	K.K.P AQUA HATCHERIES	79.94808496	12.16284298	CRZ II Zone	32.6
46	VENTURE SHIRMP HATCHERY	79.94660484	12.16080398	CRZ II Zone	45.88
47	NICE AQUA FARMS	79.94530666	12.16072664	CRZ III NDZ Zone	150.01
48	VSR SHRIMP HATCHERY	79.94627571	12.16016944	CRZ IA Zone & CRZ III NDZ Zone	37.8
49	AR SHRIMP HATCHERY	79.92888161	12.13807161	CRZ III Zone	281.9
50	JAYJAY AQUA SHIRMP HATCHERY	79.93095415	12.13742653	CRZ III Zone - No Development zone	51.1
51	EAST COAST HATCHERIES	79.92754377	12.13435317	CRZ III Zone - No Development zone	176.56
52	TROPICAL SHRIMP HATCHERY	79.9281888	12.13303735	CRZ III Zone - No Development zone	36.47

53	EMPIRE MARINE HARVEST	79.92802623	12.13273213	CRZ III Zone - No Development zone	34.33
54	HILTON HATCHERY	79.9213726	12.12322729	CRZ III Zone - No Development zone	118.68
55	BMR CLASWIN HARCHERIES	79.92180122	12.12283571	CRZ III Zone - No Development zone	57.79
56	GOLDEN HATCHERY	79.91656031	12.1140979	CRZ III Zone - No Development zone	38.28
57	INDO HATCHERY	79.91460677	12.11100657	CRZ III Zone - No Development zone	33.84
58	BEST INDIA MARINE HATCHERIES	79.91015927	12.10572778	CRZ III Zone - No Development zone	120.87
59	SONA HATCHERY	79.90857757	12.10234531	CRZ III Zone - No Development zone	40.12
60	WINNER MARINE HATCHER	79.9084502	12.10216041	CRZ III Zone - No Development zone	38.02
61	JAY JAY AQUA FARMS PACIFIC SHRIMP HATCHERY	79.90828217	12.1018767	CRZ III Zone - No Development zone	34.66
62	BEST INDIA HATCHERY	79.90467761	12.10134648	CRZ III Zone	328.7

63	ALLWIN HATCHERY	79.90735595	12.10076001	CRZ III Zone - No Development zone	47.25
64	BLUE SHRIMPS	79.88561144	12.06604852	CRZ III Zone - No Development zone	57.46
65	AQUA STAR SHRIMP HATCHERY	79.88380237	12.06547669	CRZ III Zone	201.52

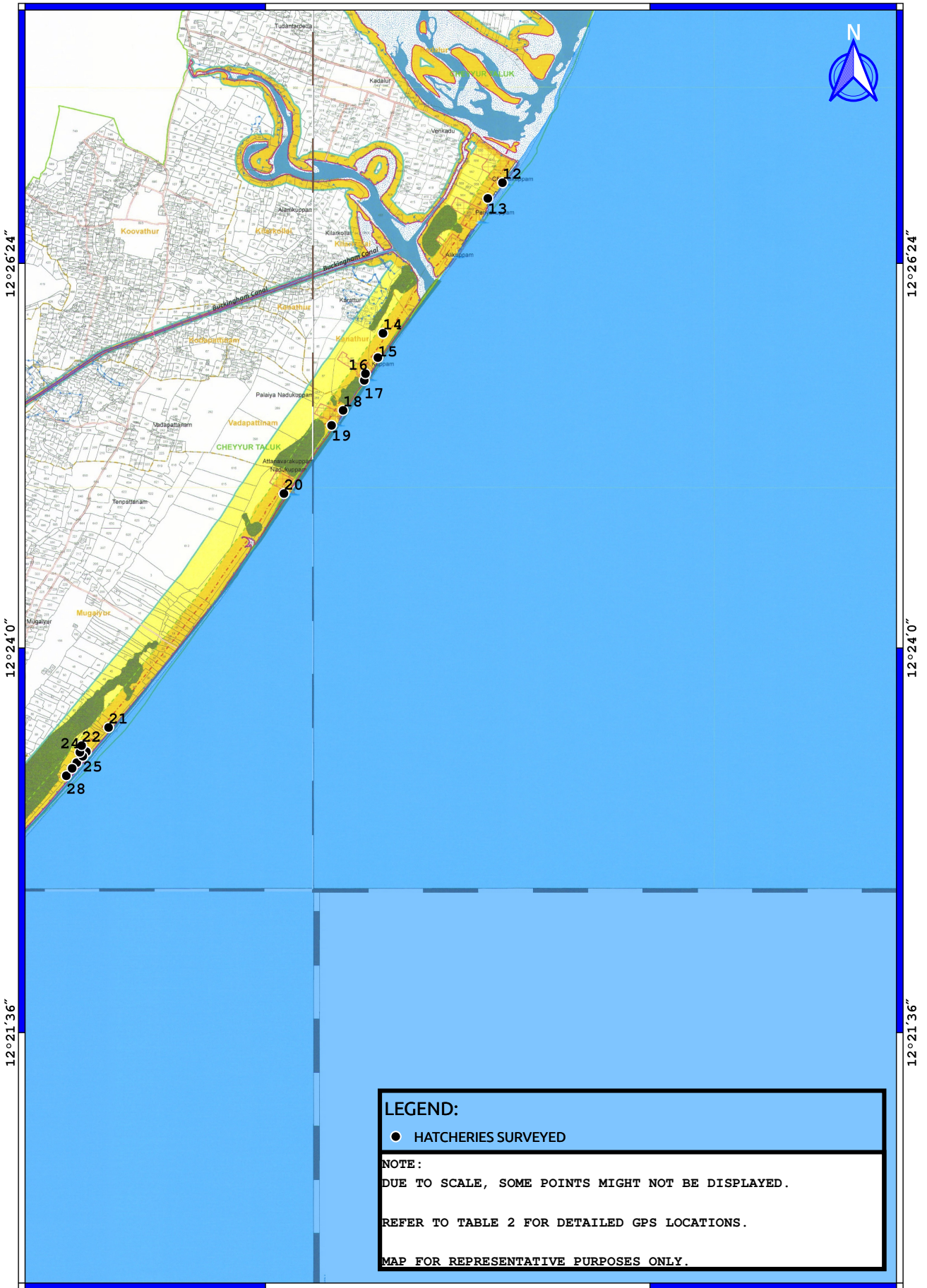
MAP SHOWING AQUACULTURE HATCHERIES ON COASTAL ZONE MANAGEMENT PLAN MAP

APPROVED UNDER CRZ NOTIFICATION 2011
80°12'0" 80°14'24"



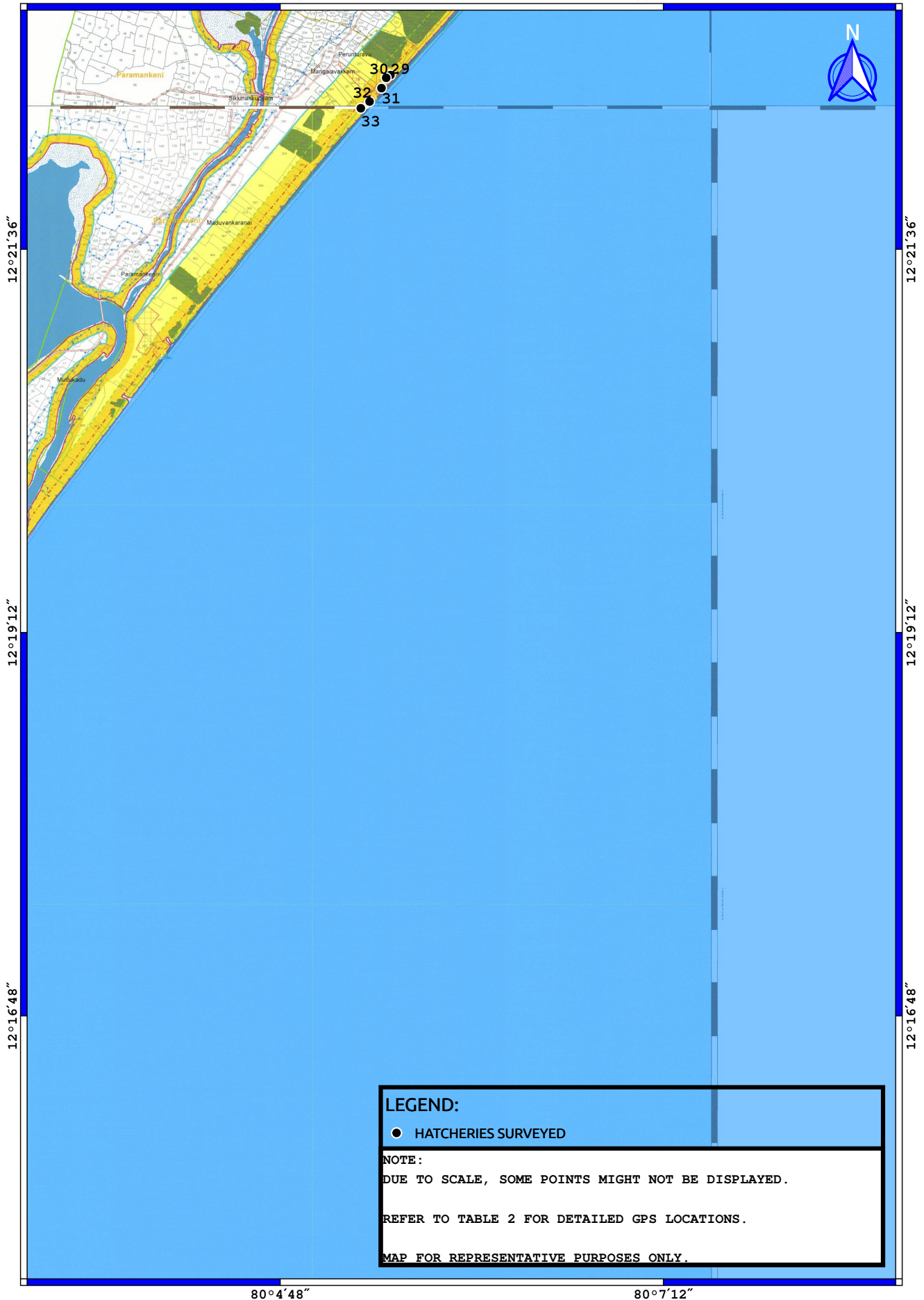
MAP SHOWING AQUACULTURE HATCHERIES ON COASTAL ZONE MANAGEMENT PLAN MAP

APPROVED UNDER CRZ NOTIFICATION 2011
 80°7'12" 80°9'36"



MAP SHOWING AQUACULTURE HATCHERIES ON COASTAL ZONE MANAGEMENT PLAN MAP

APPROVED UNDER CRZ NOTIFICATION 2011
80°4'48" 80°7'12"

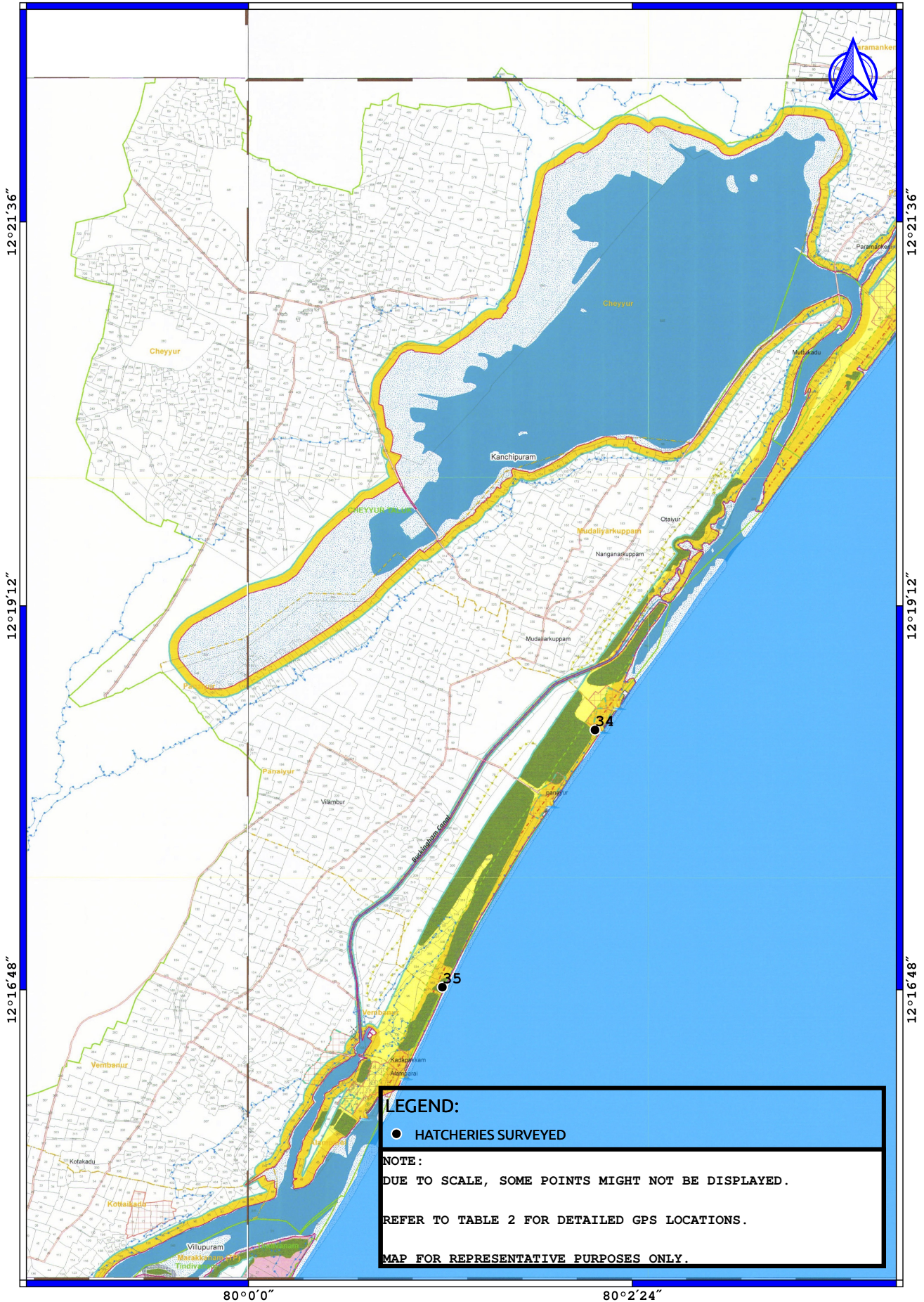


MAP SHOWING AQUACULTURE HATCHERIES ON COASTAL ZONE MANAGEMENT PLAN MAP

APPROVED UNDER CRZ NOTIFICATION 2011

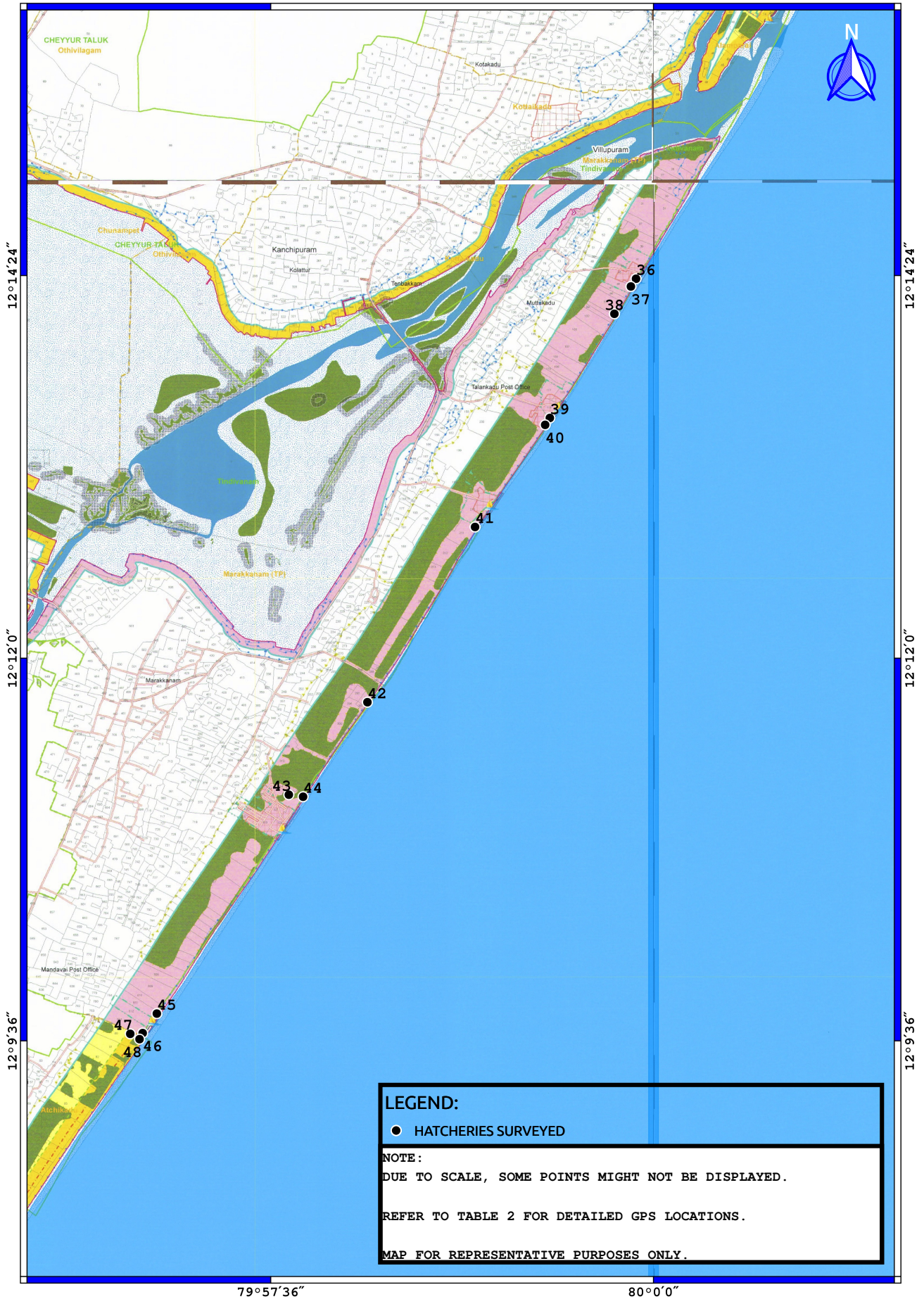
80°0'0"

80°2'24"



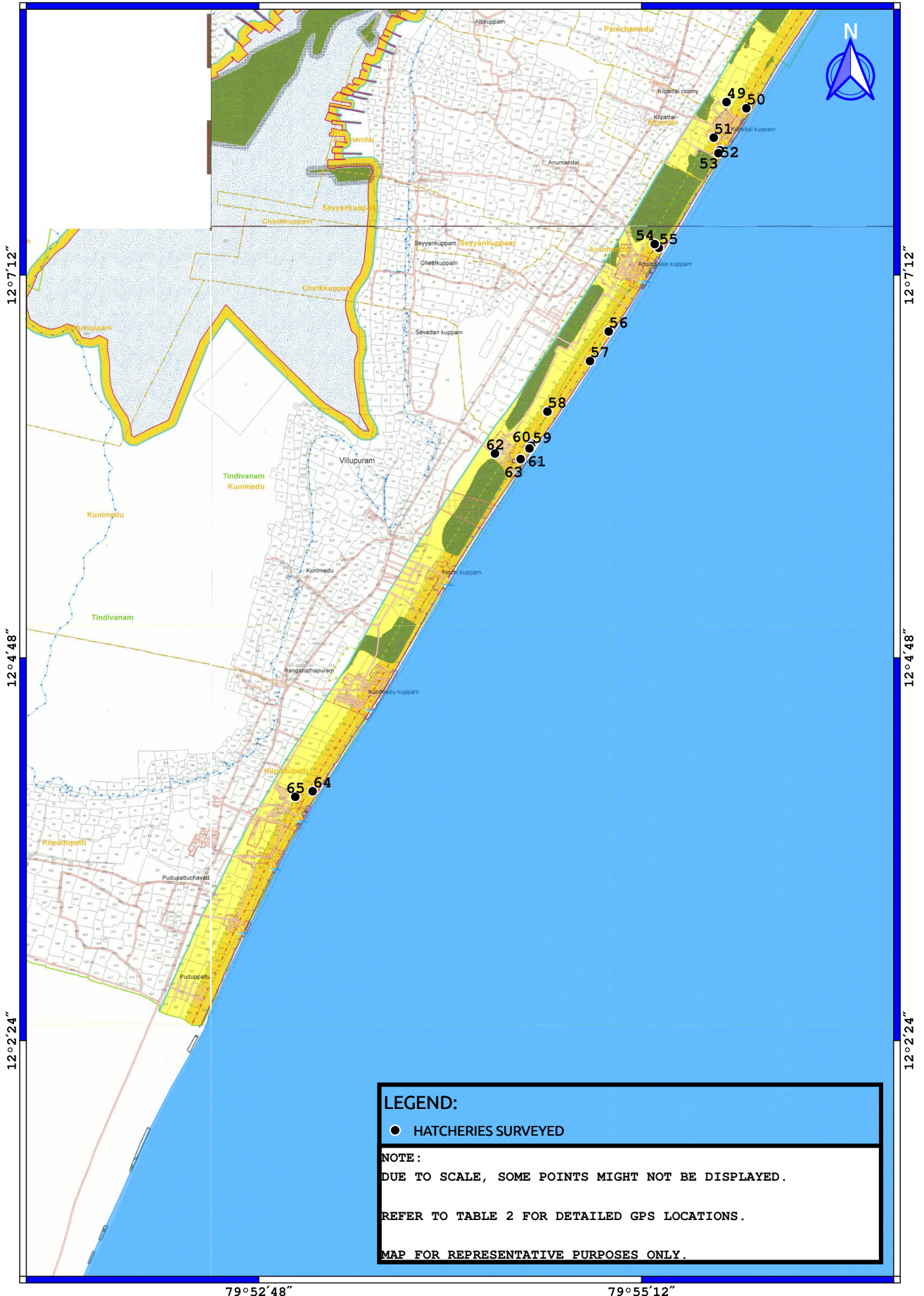
MAP SHOWING AQUACULTURE HATCHERIES ON COASTAL ZONE MANAGEMENT PLAN MAP

APPROVED UNDER CRZ NOTIFICATION 2011
79°57'36" 80°0'0"



MAP SHOWING AQUACULTURE HATCHERIES ON COASTAL ZONE MANAGEMENT PLAN MAP

APPROVED UNDER CRZ NOTIFICATION 2011
 79°52'48" 79°55'12"



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