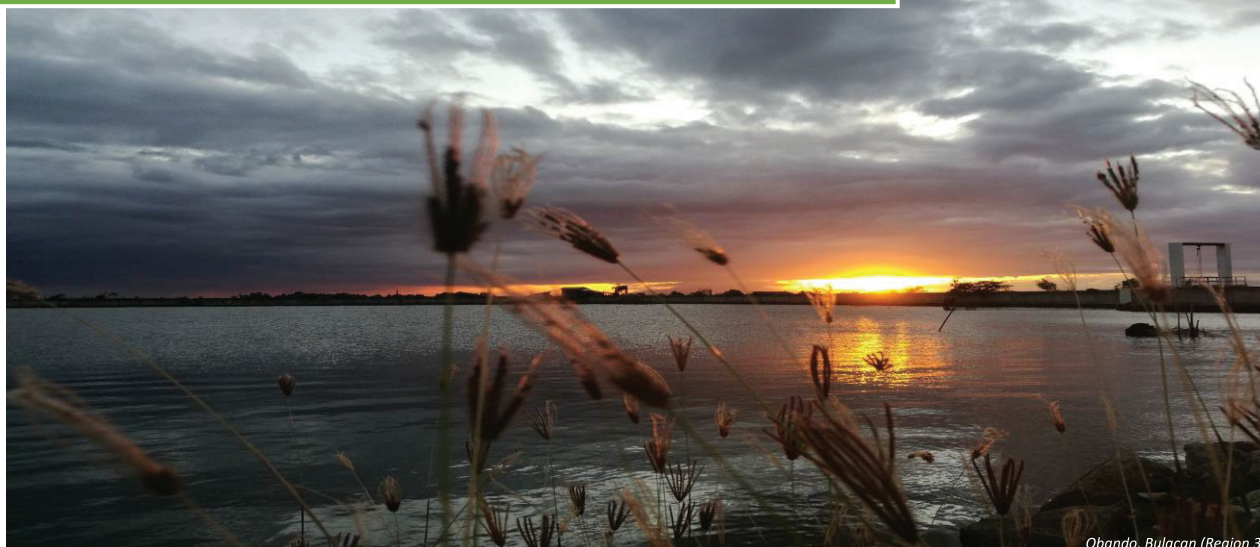


HIGHLIGHTS OF PHYSICAL ACCOMPLISHMENTS

MANILA BAY REHABILITATION PROGRAM



Obando, Bulacan (Region 3)

On 18 December 2008, the Supreme Court issued a Mandamus Order directing 13 government agencies to clean up, rehabilitate and preserve Manila Bay, and restore and maintain its water to swimming and bathing (SB) level.

The agencies tasked to restore and maintain the water of Manila Bay to SB level or fit for swimming, skin-diving, and other forms of contact recreations are:

1. Department of Environment and Natural Resources (DENR)
2. Department of Interior and Local Government (DILG)
3. Metropolitan Waterworks and Sewerage Systems (MWSS)
4. Local Water Utilities Administration (LWUA)
5. Department of Agriculture (DA)
6. Department of Public Works and Highways (DPWH)
7. Metropolitan Manila Development (MMDA)
8. Philippine Ports Authority (PPA)
9. Philippine National Police – Maritime Group (PNP-MG)
10. Philippine Coast Guard (PCG)
11. Department of Health (DOH)
12. Department of Education (DepEd)
13. Department of Budget and Management (DBM)

The mandamus orders the dismantling and removal of illegal structures along the following waterways:

1. Pasig-Marikina-San Juan Rivers;
2. Parañaque-Las Piñas-Zapote Rivers;
3. Navotas-Malabon-Tullahan-Tinajeros Rivers;
4. Connecting waterways and esteros in Metro Manila;
5. Rivers in Bataan, Bulacan, Cavite and Laguna de Bay and other rivers connecting waterways and esteros that discharge wastewater to the Manila Bay.

Meanwhile, in consonance with the issued Administrative Order 16, dated 19 February 2019, on expediting the rehabilitation and restoration of the coastal and marine ecosystem of the MB, five agencies were added to the Manila Bay Task Force (MBTF):

1. Department of Tourism (DOT)
2. Housing and Urban Development Coordinating Council (HUDCC)
3. Pasig River Coordinating Commission (PRCC)
4. MAYNILAD Water Services, Inc.
5. Manila Water Company, Inc.

Also, to intensify the implementation of the program, there are additional agencies tasked to do the following directives:

On collaboration

- 1) LGU provinces of Bataan, Pampanga, Bulacan and Cavite
- 2) LGUs along Manila Bay

On ISF matters

- 1) National Anti-Poverty Commission (NAPC)
- 2) Presidential Commission on Urban Poor (PCUP)
- 3) National Housing Authority (NHA)

On social welfare assistance

- 1) Department of Social Welfare and Development (DSWD)
- 2) Department of Labor and Employment (DOLE)
- 3) Department of Trade and Industry (DTI)

On IEC matters

- 1) Department of Education
- 2) Commission on Higher Education (CHED)

On funding concerns

Department of Budget and Management (DBM)

On engineering and technological interventions

Department of Science and Technology (DOST)

On rule of law

- 1) Department of Justice (DOJ)
- 2) Office of the Solicitor General (OSG)
- 3) Office of the Chief Presidential Legal Council
- 4) National Bureau of Investigation (NBI)

On enforcement and mobilization concerns

- 1) Department of National Defense (DND)
- 2) Armed Forces of the Philippines (AFP)
- 3) Philippine National Police (PNP)

In the Mandamus Order of the SC, the DENR was directed to implement its Operational Plan for the Manila Bay Coastal Strategy (OPMBCS) at the earliest possible time. It was also ordered to call regular coordination meetings with concerned government agencies to ensure the successful implementation of the plan.

The goal of the OPMBCS is to have Manila Bay cleaned up, rehabilitated, preserved and its waters restored and maintained at SB level by addressing the point and non-point sources of pollution through its thematic clusters: liquid waste management, solid waste management, informal settler families and illegal structures management, and habitat and resource management through effective institutional arrangement/partnership governance.

Implementation of the Operations Plan for the Manila Bay Coastal Strategy

Liquid Waste Management

For CY 2020, the implementation of the OPMBCS has seen a number of significant results. The most important parameter in monitoring the rehabilitation of the Manila Bay and the heart of the Mandamus Order of the Supreme Court and Administrative Order 16, Series of 2019 of President Rodrigo Duterte is making sure that the liquid waste discharged into Manila Bay is in compliance with effluent (General Effluent Standard) and/or ambient water quality with the water quality guidelines.

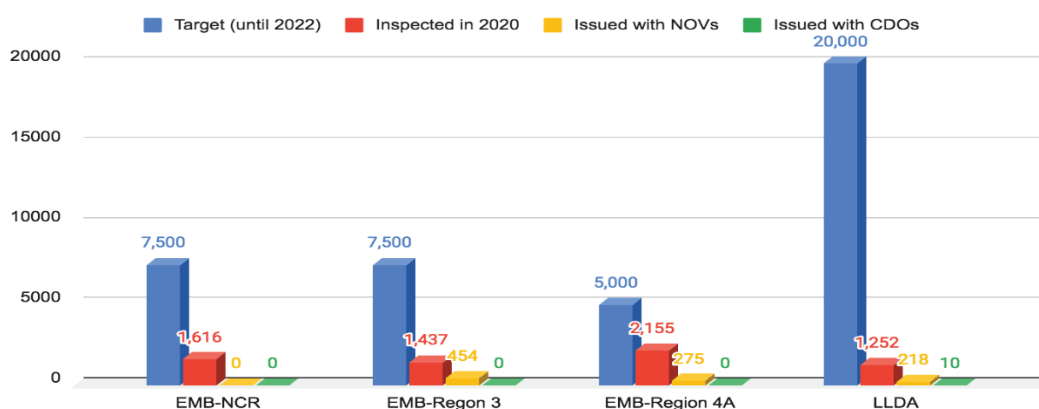


Figure 1.1 No. of establishments inspected with NOV and CDOs issued

Figure 1.1 shows that out of a total target of 40,000 establishments to be inspected until 2022, about 6,460 establishments were accomplished for 2020, wherein 947 were issued Notice of Violations (NOVs), and 10 with Cease and Desist Orders (CDOs).

Another major output for Liquid Waste Cluster is to connect all the water-served population to the sewerage system of Maynilad Water Services Inc. (MWSI) and Manila Water Company Inc. (MWCI). For CY 2020, the number of served population in the Manila Bay Region totaled to 16,983,800. About 4,248,041 were connected to the sewer system. Of the 9,374,521 offered with sanitation services, around 5,965,729 were served accordingly.

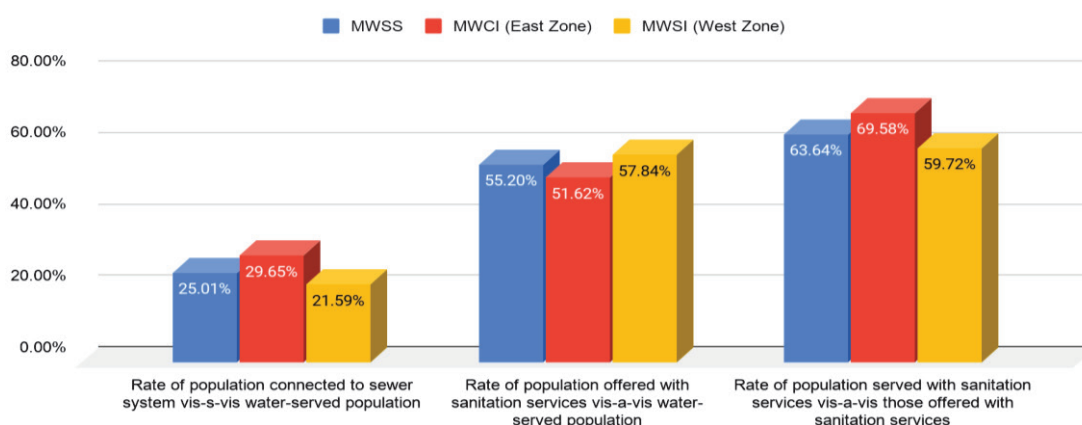


Figure 1.2 Data on water and sewerage management activities in the MB Regions

Figure 1.2 shows that the percentage of population connected to the sewer system covers only 29.65% for MWCI (East Zone) and only 21.59% for MWSI (West Zone). The percentage of the water-served population offered with sanitation services reached 51.62% for the MWCI while only 57.84% for MWSI. Acceptance rate of sanitation services for MWCI and MWSI are 69.58% and 59.72% respectively.

Solid Waste Management

For the Solid Waste Management Cluster, the DENR alone has organized a total of 21,229 cleanup activities, including collection of wastes through trash boats, trash traps, and Estero Rangers, from January to December 2020. These were participated in by about 121,339 volunteers together with DENR officials and employees from the Central Office, its Bureaus and Attached Agencies, and the Field Offices of DENR-NCR, Region 3, and CALABARZON. Accordingly, a total of 35,037.37 cu m of solid wastes have been collected by the DENR.

Trash traps are being installed in priority waterways of the Manila Bay Regions in order to prevent solid wastes from reaching the bay. To date, a total of 227 fabricated trash traps have been installed, to wit: 182 in Region 3, 34 in CALABARZON, and 11 in NCR. Nine (9) trash boats are operational in the MB regions.

Informal Settler Families and Illegal Structures Management

The OPMBCS cluster on Informal Settler Families (ISF) and Illegal Structures Management has continued with the pre-relocation activities for the remaining priority areas, to wit: Estero de Magdalena, Parola to Delpan Bridge, Isla Puting Bato, Baseco, and Sto. Niño Multinational Riverside.

Out of the 214,871 baseline of ISFs within the Manila Bay Area, a total of 32,361 (15%) were recorded and resettled by third quarter of CY 2020, as shown in the graph below.

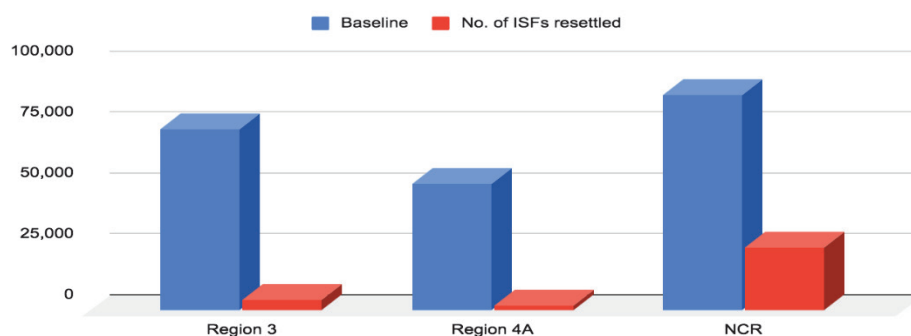


Figure 1.3 Number of ISFs within MB area recorded and resettled by third quarter of 2020

Figure 1.3 shows that out of the given baselines, resettled ISFs in Regions 3, 4A, and NCR reached only about 6%, 4%, and 29% in numbers, respectively.



Figure 1.4 Location map of ISFs within BASECO (left) and Sto. Nino Multi-National Riverside (right)

In terms of easement recovery for CY 2020, a total of 180.59 kilometers of easement in Region III, CALABARZON, and NCR were delineated by the DENR through ground and drone survey and staked-out with PVC. A total of 69.32 km of easement area along priority waterways was delineated by the DENR Survey Teams of concerned PENR Offices in Region 3. In CALABARZON, about 52.595 km of easement boundaries in Silang, Dasmariñas, and Imus were delineated. Meanwhile, NCR has completed the drone and ground survey of 27 waterways, covering a total length of 58.67 km and established a total of 147 ground control points.

The Habitat and Resources Management

The Habitat and Resources Management cluster of the OPMBCS has monitored 21 Integrated Upland Conservation Guided Farms (IUCGF), as well as, occurrence of Harmful Algal Bloom within the Manila Bay Region. Inspection of the mangrove propagation and production site in Sasmuan, Pampanga and production of additional mangrove propagules as placement of dried mangroves in the planted area have also been conducted. The cluster was able to provide livelihood projects and several fishing gears and paraphernalia for local fisherfolks. The DILG has continued to monitor the compliance of coastal LGUs to the Philippine Fisheries Code and has issued policies on protection of biodiversity, management of fisheries resources, and food security. Strict implementation of fisheries and marine laws has been observed to prevent marine pollution within the Bay by PCG and PNP-MG while DA-BFAR has filed and monitored appropriate cases.

Partnership and Governance

In support of the Manila Bay Cleanup and Rehabilitation Program and in order to strengthen anti-littering and anti-illegal dumping of waste into the waterways, the DENR Regions concerned, through its Manila Bay Site Coordinating Management Offices, have continued to conduct massive Information, Education, Communication (IEC) campaigns in the form of a radio advocacy, and social media campaign, and production of promotional materials, among others.

The Battle for Manila Bay

Notwithstanding the Continuing Mandamus Order of the SC and the combined efforts of the agencies created under AO 16, the pollution of Manila Bay continued unabated brought about by the lack of funding, focused intervention and public apathy.

Against the backdrop of the continuing deterioration of MB, DENR Sec. Roy A. Cimatu together with DILG Sec. Eduardo M. Año, DoT Sec. Bernadette Romulo-Puyat, DPWH Sec. Mark A. Villar, MMDA Chairman Danilo Lim, and thousands of stakeholders launched the “Battle for Manila Bay” on 27 January 2019 in order to jumpstart the Manila Bay Rehabilitation Program.

The Manila Bay Rehabilitation Program will be implemented in three phases: 1) Cleanup and Water Quality Improvement; 2) Full Rehabilitation and Resettlement; and 3) Protection and Sustainment.

Cleanup and Water Quality Improvement

The DENR focused on water quality improvement since the launching of the Battle for Manila Bay. The Department, together with the Metropolitan Manila Development Authority (MMDA), inaugurated the very first solar-powered Sewage Treatment Plant (STP) last July 30, 2020. Now fully operational, the plant has a capacity of 500,000 liters of treated wastewater per day coming from the outfalls of Padre Faura, Remedios, and Estero de San Antonio de Abad, before it is discharged to Manila Bay. Since its operation, the fecal coliform levels in the water outflow notably exhibit improving water quality in Manila Bay.

In support to the MB rehabilitation, the Laguna Lake Development Authority (LLDA), an attached agency of the DENR which also protects the environment over the lake basin’s surface water, enforced water quality regulations in the Manila Bay area. Intensified surveillance and monitoring of industries and establishments in the Cities of Pasay and Manila were undertaken which led to the issuances of legal orders to those which violated the effluent standards causing water pollution to Manila Bay and other water bodies.

Various cleanup activities were initiated by LLDA and partner LGU in Sukol Creek, Brgy. Ibayong Tipas, Taguig City. The MBCO-Laguna initiated comprehensive cleanup in San Juan River covering Brgys. Dos and Parian in Calamba City which LLDA also joined. A total of 7.5 tons and 2.6 tons of waste were hauled and collected, respectively.



Figure 1.5 Cleanup in Sukol Creek, Taguig City



Figure 1.6 EMB Central Office supported the cleanup in preparation for the first-year anniversary of MB rehabilitation

In preparation for the first-year anniversary celebration of the Manila Bay Cleanup and Rehabilitation on 25 January 2020, dubbed as "Battle for Manila Bay: A Year After", the EMB Central Office spearheaded the cleanup in BASECO beach and Manila bay.



Figure 1.7 Liters of wastewater discharged coming from the outfalls of tributaries

Figure 1.7 shows that about 500,000 liters of wastewater coming from the outfalls of Padre Faura, Remedios, and Estero de San Antonio de Abad are first treated through the Sewage Treatment Plant before it is discharged to the bay.

Of the nine (9) stations monitored in the Baywalk Area, four (4) stations registered a decrease in fecal coliform level in comparison to 2019 data, as shown in Table 1 and Figure 1.8.

Table 1. Fecal coliform level in the Manila Baywalk Area in 2019 and in 2020

MONITORING STATION	GEOMEAN 2019 (IN THOUSANDS)	GEOMEAN 2020 (IN THOUSANDS)
Station 1 - 100m left side of US Embassy along Roxas Boulevard	62.7	105
Station 2 - Padre Faura Drainage Outfall Facing Sunny Bay Suites Building	7620	2760
Station 3 - In front of Diamond Hotel, Quintos Street	50.9	15.6
Station 4 - Newly found drainage - Across Hop Inn near Malate Bayview Mansion	13400	551
Station 5 - Across Carpel Shell Export & Museum, Ewong's Pa Rin Bar Grill, Manila Finest Grill	49.8	76.2
Station 6 - Rajah Soliman/ Remedios Drainage Outfall across Aristocrat Restaurant	30400	19500
Station 7 - Grand Boulevard Hotel, near Department of Finance	63.6	111
Station 8 - In front of Admiral Hotel along Roxas Boulevard (across Aldecoa Street)	24.3	119
Station 9 - Across Quirino Ave Stop light along Roxas Boulevard before Manila Yacht Club	65.7	154

Figure 1.8 Percent decrease in fecal coliform in the Manila Baywalk Area

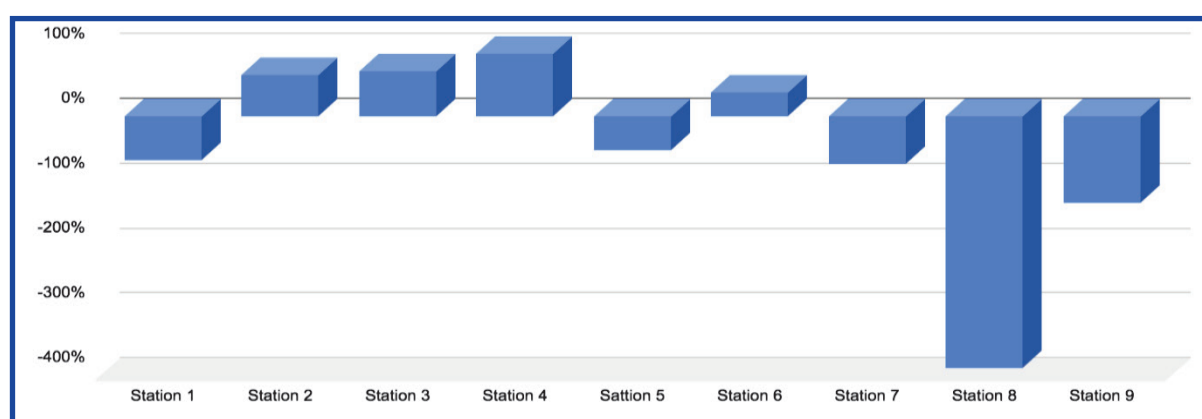


Figure 1.8 shows that four stations registered a decrease in fecal coliform level in comparison to the 2019 data, as follows: Station 2 (from 7.62M to 2.76M), Station 3 (from 50.9K to 15.6K), Station 4 (from 13.4M to 551K) and Station 6 (from 30.4M to 19.5M). Station 4 registered a significant decrease.



Table 1.9 Photo comparison of the Estero de Abad in January 2020 (left) and in January 2021 (right)

The data showed that there are significant changes in the coliform level in the Estero de San Antonio de Abad covering the reporting period. Of the ten (10) monitoring stations situated along the Estero de San Antonio de Abad, six registered a decrease in coliform level. Station 10 on Manila Yacht Club registered a significant decrease from 51 million in 2019 down to 8.92 million in 2020.

Meanwhile, the Bataan Shipyard and Engineering Company (BASECO) beach hosts one of most number of Informal Settler Families (ISFs) in the whole Manila Bay Region. Out of the four (4) stations monitored, only Station 10 (from 88K to 64.7K) registered a decrease in coliform level in comparison with 2019 data.



Figure 1.10 Photo comparison of the BASECO Beach in 2019 (left) and in 2020 (right)

As of December 31, 2020, a total of 585 industries were inspected in the area and 16 were issued with Cease and Desist Orders for water pollution and operating without necessary clearance/permit.



Figure 1.11 LLDA GM Medina with DENR Undersecretary for Solid Waste Management and LGU Concerns Benny Antiporda, LGU-Pasay and MMDA. On March 9, LLDA issued CDOs to 5 establishments and to HK Sun Town Plaza, Pasay City for non-compliance to proper discharge of wastewaters that violates the Clean Water Act

Geo-Engineering Intervention

It is noteworthy that rehabilitation efforts in 2020 also focused on solutions provided through geo-engineering interventions led by the DENR in partnership with other Mandamus Agencies, specifically, the DPWH and the MMDA. *Table 2* shows the five (5) concurrent projects in the Baywalk Area. The remaining project is the Circumferential Sewerage Interceptor and Communal Septic Tank, which is currently ongoing in the BASECO Area.

Table 2. Geo-engineering interventions and status/schedule of completion

PROJECT	TARGET (TARGET DATE OF COMPLETION)	% ACCOMPLISHED	REMARKS
Trash booms	2,500 linear meter (March 22, 2020)	100%	Reflectorized trash booms were completely installed.
Silt Curtains	3,100 linear meter (March 15, 2020)	100%	Silt curtains were being used for dredging works and beach nourishment protection.
Beach Nourishment	102,600 cu m (Bottom Sand) (July 13, 2020)	44%	Ongoing construction of submerged breakwater, 120 m away from the seawall, and ongoing laying of Dolomite sand.
Dredging and Desilting	279,000 cu m (July 17, 2020)	54%	Ongoing dredging works on Station 160-450 with a total volume dredged of 210,549.00 cu.m
STP and Outfall	March 15, 2020	100%	Faura, Remedios and Abad connections to STP is under repair. Installation of power lines for the outfalls is ongoing.



Figure 1.12 Installation of trash booms and silt curtains; dredging and desilting activities in the baywalk waters; Beach Nourishment Project; and newly established STP

The Installation of Trash Booms has been accomplished by reaching the target of 2,500 linear meters on March 22, 2020 (top left). The target of 3,100 linear meters for the Installation of Silt Curtains has been completed last June 24, 2020 (top right). The Beach Nourishment Project is currently at 44.39% completion and was initially opened to the public on 19 September 2020. However, some activities in the priority area were halted after the operation of the dolomite mining in Alcoy, Cebu, was suspended by the DENR Secretary Roy A. Cimatu (middle left). As a result of dredging and desilting activities in the Baywalk waters, about 166,799 (54.36%) were accomplished out of the 210,549 cubic meters total target (middle right). The Sewage Treatment Plant (STP) was established last 30 July 2020.

Meanwhile, the Circumferential Sewerage Interceptor and Communal Septic Tank Project that aim to control waste within the BASECO Compound through septic tanks and interceptor and to treat water collected from the drainage system before discharging into Manila Bay are also underway.

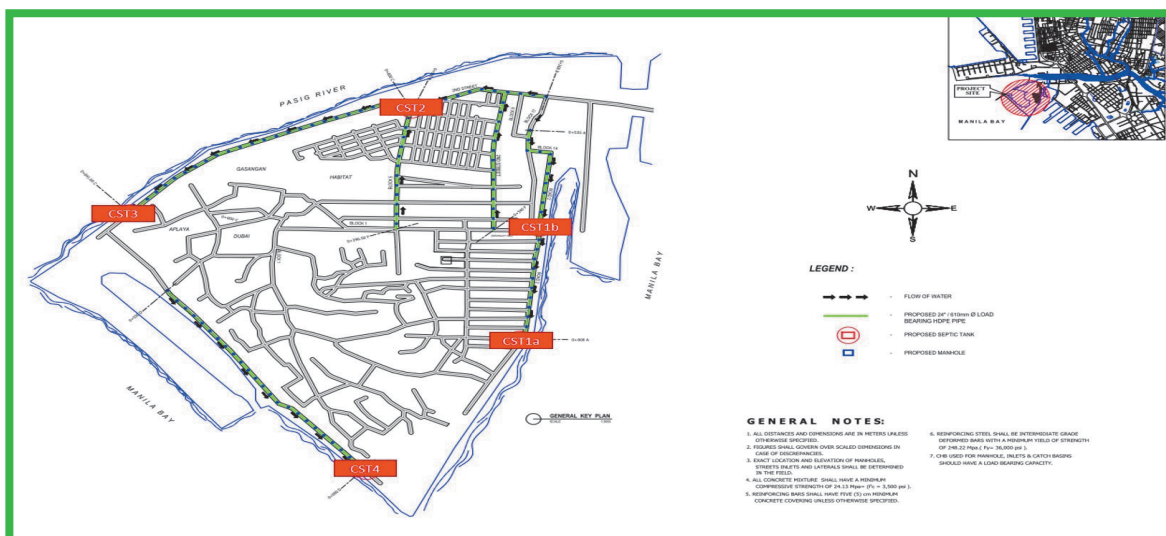


Figure 1.13 The project is being done in five (5) locations (top) with three (3) communal septic tanks already completed, i.e. Block 9, Block 15 (bottom), and 2nd Street in BASECO, Manila. Block 5 and Block 14 are currently 50% accomplished.

Another project for sanitation facilities called Project: Kubeta Ko, is ongoing in partnership with Bill and Melinda Gates Foundation, the LGU of Manila, and Maynilad. It is a portable, container-based toilet solution to provide dignified facilities for ISFs in the City of Manila to immediately stop and minimize open defecation by ISFs into Manila Bay. Collection of wastes, which are treated by Maynilad, is scheduled every Mondays and Thursdays.



Figure 1.14 Installation of the sanitation facility called Project: Kubeta Ko

Figure 1.14 presents the launching of “Project: Kubeta Ko” held on 15 December 2020 and graced by Hon. Isko Moreno, Manila City Mayor (top left). A total of 38 toilet units were installed in 38 households at Brgy. 275, Parola 3, Tondo, Manila (top right, bottom).

Estero Dredging

One of the major projects in the Rehabilitation of Manila Bay Program is the dredging of esteros in the National Capital Region which is being conducted by the DPWH and funded by the DENR.

Dredging, Desilting and Hauling of submerged garbage operation were done in San Juan River, Pasig River, Navotas-Malabon River, Parañaque River, Taguig-Pateros River and Marikina River. Out of 357 rivers, creeks and esteros only 128 have been funded by the DENR for CY 2020.

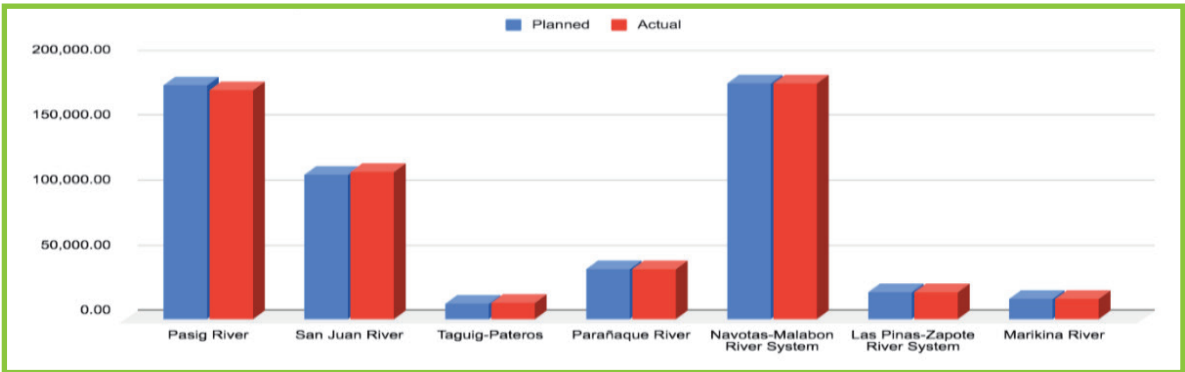


Figure 1.15 Volume of dredged materials from 34 esteros, creeks and rivers

Figure 1.15 shows that the dredging of thirty-four (34) esteros was completed and a total of 557,542.99 cu m or 99.82% of dredged materials were collected from esteros, creeks, and rivers.

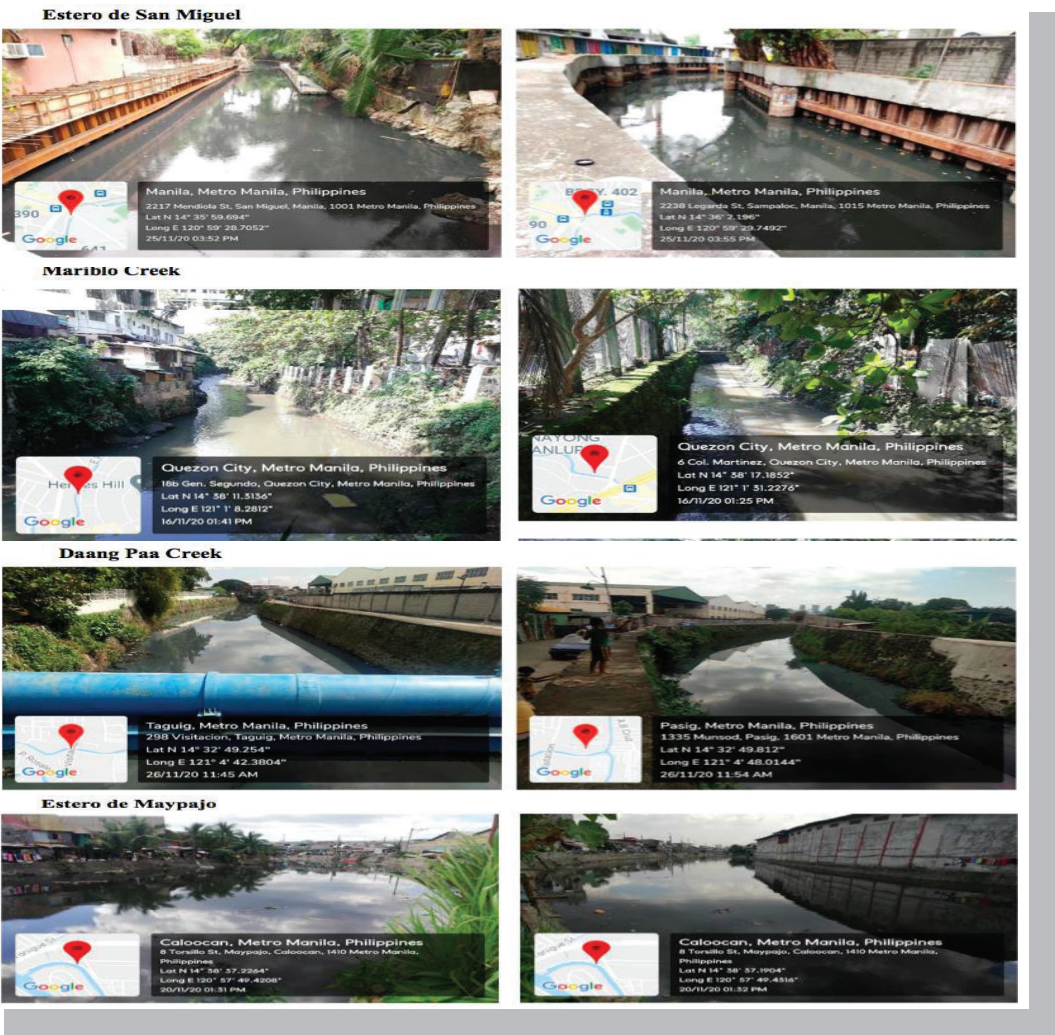


Figure 1.16 Dredging activities in Estero de San Miguel along Pasig River, Mariblo Creek along San Juan River, Daang Paa Creek along Taguig-Pateros River, and Estero de Maypajo along Navotas-Malabon River

Ways Forward

The rehabilitation of Manila Bay will continue to provide results in compliance with the Supreme Court mandamus order. The challenges posed by the effects of the COVID-19 pandemic will be overcome by maximizing operational capacities within the DENR and among its partners. For CY 2021, ensuring the compliance of discharged waters with effluent and/or ambient water quality with the water quality guidelines, as well as, the strict implementation of solid waste management in all LGUs will be continuously monitored and executed. Monitoring of the upkeep of infrastructures, facilities, and equipment will be facilitated. Partnerships with concerned Agencies, LGUs, and stakeholders will be strengthened.

It is envisioned that virtual meetings will continue in 2021 as these are easier to organize and implement as compared to face-to-face meetings. Recorded meetings are important for accessibility and guided reference to all stakeholders. Moreover, during the pandemic when site inspections are limited, the Environmental Management Bureau has drafted an online site monitoring activities to implement Environmental Laws. A simulation of virtual inspection to the Regional Offices will be conducted in 2021 to give an overview of the implementation of the draft guidelines and at the same time, provide scenario of possible problems that may be encountered in handling the technical and procedural issues.