# APPENDIX H ECONOMIC AND FINANCIAL EVLUATION

**Table H.1.1 Summary of Economic Benefits to be Generated from the Project in Conventional Cargo Handling at La Union Port by Major Commodity Ite**

| Year | Cereals and Soy Bean Meal | | | | | Fertilizer | | | | | Iron and Steel Products | | | | | Raw Sugar | | | | | *Major Conventional* Cargo Total | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Volume MT | Sea Transport '000 US$ | Land Transport '000 US$ | Ship Waiting '000 US$ | Total '000 US$ | Volume MT | Sea Transport '000 US$ | Land Transport '000 US$ | Ship Waiting '000 US$ | Total '000 US$ | Volume MT | Sea Transport '000 US$ | Land Transport '000 US$ | Ship Waiting '000 US$ | Total '000 US$ | Volume MT | Sea Transport '000 US$ | Land Transport '000 US$ | Ship Waiting '000 US$ | Total '000 US$ | Volume MT | Sea Transport '000 US$ | Land Transport '000 US$ | Ship Waiting '000 US$ | Total '000 US$ |
| 2005 | 347,700 | 1,391 | 1,704 | 80 | 3,095 | 105,300 | 253 | 516 | -78 | 691 | 37,200 | 11 | 182 | -24 | 170 | 60,000 | 144 | 294 | -66 | 372 | 550,200 | 1,799 | 2,696 | -88 | 4,527 |
| 2006 | 362,100 | 1,448 | 1,774 | 70 | 3,223 | 105,300 | 253 | 516 | -87 | 682 | 40,860 | 12 | 200 | -29 | 183 | 60,000 | 144 | 294 | -66 | 372 | 568,260 | 1,857 | 2,784 | -112 | 4,460 |
| 2007 | 376,500 | 1,506 | 1,845 | 61 | 3,351 | 105,300 | 253 | 516 | -96 | 673 | 44,520 | 13 | 218 | -35 | 197 | 60,000 | 144 | 294 | -66 | 372 | 586,320 | 1,916 | 2,873 | -136 | 4,593 |
| 2008 | 390,900 | 1,564 | 1,915 | 51 | 3,479 | 105,300 | 253 | 516 | -105 | 664 | 48,180 | 14 | 236 | -40 | 210 | 60,000 | 144 | 294 | -66 | 372 | 604,380 | 1,975 | 2,961 | -160 | 4,725 |
| 2009 | 405,300 | 1,621 | 1,986 | 42 | 3,607 | 105,300 | 253 | 516 | -113 | 655 | 51,840 | 16 | 254 | -46 | 224 | 60,000 | 144 | 294 | -66 | 372 | 622,440 | 2,033 | 3,050 | -184 | 4,858 |
| 2010 | 419,700 | 1,679 | 2,057 | 32 | 3,735 | 105,300 | 253 | 516 | -122 | 646 | 55,500 | 17 | 272 | -52 | 237 | 60,000 | 144 | 294 | -66 | 372 | 640,500 | 2,092 | 3,138 | -208 | 4,991 |
| 2011 | 435,180 | 1,741 | 2,132 | 120 | 3,873 | 105,300 | 253 | 516 | -108 | 660 | 60,180 | 18 | 295 | 15 | 328 | 60,000 | 144 | 294 | -72 | 366 | 660,660 | 2,155 | 3,237 | -44 | 5,228 |
| 2012 | 450,660 | 1,803 | 2,208 | 209 | 4,011 | 105,300 | 253 | 516 | -94 | 674 | 64,860 | 19 | 318 | 82 | 420 | 60,000 | 144 | 294 | -77 | 361 | 680,820 | 2,219 | 3,336 | 119 | 5,465 |
| 2013 | 466,140 | 1,865 | 2,284 | 297 | 4,149 | 105,300 | 253 | 516 | -80 | 688 | 69,540 | 21 | 341 | 149 | 511 | 60,000 | 144 | 294 | -83 | 355 | 700,980 | 2,282 | 3,435 | 283 | 5,703 |
| 2014 | 481,620 | 1,926 | 2,360 | 385 | 4,286 | 105,300 | 253 | 516 | -66 | 702 | 74,220 | 22 | 364 | 216 | 602 | 60,000 | 144 | 294 | -89 | 349 | 721,140 | 2,345 | 3,534 | 446 | 5,940 |
| 2015 | 497,100 | 1,988 | 2,436 | 474 | 4,424 | 105,300 | 253 | 516 | -52 | 716 | 78,900 | 24 | 387 | 283 | 693 | 60,000 | 144 | 294 | -95 | 343 | 741,300 | 2,409 | 3,632 | 610 | 6,177 |
| 2016 | 516,556 | 2,066 | 2,531 | 463 | 4,597 | 105,300 | 253 | 516 | -22 | 747 | 86,101 | 26 | 422 | 961 | 1,408 | 60,000 | 144 | 294 | -95 | 343 | 767,957 | 2,489 | 3,763 | 1,308 | 7,096 |
| 2017 | 536,012 | 2,144 | 2,626 | 451 | 4,771 | 105,300 | 253 | 516 | 9 | 778 | 93,303 | 28 | 457 | 1,342 | 1,827 | 60,000 | 144 | 294 | -63 | 375 | 794,614 | 2,569 | 3,894 | 1,739 | 7,750 |
| 2018 | 555,467 | 2,222 | 2,722 | 473 | 4,944 | 105,300 | 253 | 516 | 40 | 809 | 100,504 | 30 | 492 | 1,860 | 2,383 | 60,000 | 144 | 294 | -65 | 373 | 821,271 | 2,649 | 4,024 | 2,308 | 8,508 |
| 2019 | 574,923 | 2,300 | 2,817 | 362 | 5,117 | 105,300 | 253 | 516 | 71 | 840 | 107,705 | 32 | 528 | 2,419 | 2,979 | 60,000 | 144 | 294 | -23 | 415 | 847,928 | 2,729 | 4,155 | 2,829 | 9,351 |
| 2020 | 594,379 | 2,378 | 2,912 | 434 | 5,290 | 105,300 | 253 | 516 | 102 | 870 | 114,906 | 34 | 563 | 3,057 | 3,655 | 60,000 | 144 | 294 | -74 | 364 | 874,585 | 2,809 | 4,285 | 3,519 | 10,179 |
| 2021 | 617,642 | 2,471 | 3,026 | 748 | 5,497 | 105,300 | 253 | 516 | 393 | 1,161 | 125,394 | 38 | 614 | 7,932 | 8,584 | 60,000 | 144 | 294 | -67 | 371 | 908,336 | 2,905 | 4,451 | 9,006 | 15,613 |
| 2022 | 640,905 | 2,564 | 3,140 | 828 | 5,704 | 105,300 | 253 | 516 | 377 | 1,145 | 135,882 | 169 | 694 | 7,341 | 8,204 | 60,000 | 144 | 294 | -60 | 378 | 942,087 | 3,130 | 4,645 | 8,485 | 15,431 |
| 2023 | 664,168 | 2,657 | 3,254 | 1,586 | 5,911 | 105,300 | 253 | 516 | 757 | 1,526 | 146,369 | 301 | 774 | 6,749 | 7,824 | 60,000 | 144 | 294 | -53 | 385 | 975,837 | 3,354 | 4,838 | 9,040 | 15,646 |
| 2024 | 687,431 | 2,750 | 3,368 | 1,562 | 6,118 | 105,300 | 253 | 516 | 1,736 | 2,505 | 156,857 | 432 | 854 | 6,158 | 7,444 | 60,000 | 144 | 294 | -47 | 391 | 1,009,588 | 3,579 | 5,052 | 9,410 | 16,459 |
| 2025 | 710,694 | 2,843 | 3,482 | 1,538 | 6,325 | 105,300 | 253 | 516 | 2,715 | 3,484 | 167,344 | 564 | 933 | 5,979 | 7,477 | 60,000 | 144 | 294 | -40 | 398 | 1,043,339 | 3,804 | 5,226 | 10,193 | 17,684 |
| 2026 | 738,510 | 2,954 | 3,619 | 1,171 | 6,573 | 105,300 | 253 | 516 | 2,455 | 3,223 | 182,618 | 756 | 1,049 | 5,040 | 6,845 | 60,000 | 144 | 294 | -96 | 342 | 1,086,428 | 4,107 | 5,478 | 8,569 | 16,983 |
| 2027 | 738,510 | 2,954 | 3,619 | 1,171 | 6,573 | 105,300 | 253 | 516 | 2,455 | 3,223 | 182,618 | 756 | 1,049 | 5,040 | 6,845 | 60,000 | 144 | 294 | -96 | 342 | 1,086,428 | 4,107 | 5,478 | 8,569 | 16,983 |
| 2028 | 738,510 | 2,954 | 3,619 | 1,171 | 6,573 | 105,300 | 253 | 516 | 2,455 | 3,223 | 182,618 | 756 | 1,049 | 5,040 | 6,845 | 60,000 | 144 | 294 | -96 | 342 | 1,086,428 | 4,107 | 5,478 | 8,569 | 16,983 |
| 2029 | 738,510 | 2,954 | 3,619 | 1,171 | 6,573 | 105,300 | 253 | 516 | 2,455 | 3,223 | 182,618 | 756 | 1,049 | 5,040 | 6,845 | 60,000 | 144 | 294 | -96 | 342 | 1,086,428 | 4,107 | 5,478 | 8,569 | 16,983 |
| 2030 | 738,510 | 2,954 | 3,619 | 1,171 | 6,573 | 105,300 | 253 | 516 | 2,455 | 3,223 | 182,618 | 756 | 1,049 | 5,040 | 6,845 | 60,000 | 144 | 294 | -96 | 342 | 1,086,428 | 4,107 | 5,478 | 8,569 | 16,983 |
| 2031 | 738,510 | 2,954 | 3,619 | 1,171 | 6,573 | 105,300 | 253 | 516 | 2,455 | 3,223 | 182,618 | 756 | 1,049 | 5,040 | 6,845 | 60,000 | 144 | 294 | -96 | 342 | 1,086,428 | 4,107 | 5,478 | 8,569 | 16,983 |
| 2032 | 738,510 | 2,954 | 3,619 | 1,171 | 6,573 | 105,300 | 253 | 516 | 2,455 | 3,223 | 182,618 | 756 | 1,049 | 5,040 | 6,845 | 60,000 | 144 | 294 | -96 | 342 | 1,086,428 | 4,107 | 5,478 | 8,569 | 16,983 |

Note (1): Cement currently handled at Punta Gorda and assumed to shift to La Union Port was excleded in economic benefits estimation as it is considred not to affect the said matter.

Note (2): "Major cargo" in the heading of the above table excludes cement as mentioned Note (1) and other miscellaneous cargoes that are not clearly identified in generating economic benefits, resulting some gap between this table as weell as Table 11.1.2 and the table used in financial analusis such as Table 11.2.1that contains all cargo.

**Table H.1.2 Economic Benefits Generated in Cereals and Soy Bean MealTransport**

| Remarks in port saturation | Year | Volumme | Ship transport cost (sea navigation + berth staying) | | | | | Land Trasport Cost | | | | | Offshore Ship Waiting Cost | | | | | | | Total benefits |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | With (La Union) | Without (Acajutla) | Without (Quetzal) | Difference (benefit) | Total bebefits | With (La Union) | Without (Acajutla) | Without (Quetzal) | Difference (benefit) | Total bebefits | With (La Union) | | With (Acajutla) | | Without (Acajutla) | | Total bebefit | |
| | | MT | US$/MT | US$/MT | US$/MT | US$/MT | '000 US$ | US$/MT | US$/MT | US$/MT | US$/MT | '000 US$ | US$/vessel /day | toal days | US$/vessel /day | toal days | US$/vessel /day | toal days | '000 US$ | |
| | | A | B | C | D | E = C-B | F = A x E | G | H | I | J = H-G | K= J x A | L | M | N | O | P | Q | R=PxQ-NxO-LxM | S = F+ K +R |
| La Union: 50,000 DWT | 2005 | 347,700 | 6.0 | 10.0 | | 4.0 | 1,391 | 2.5 | 7.4 | | 4.9 | 1,704 | 10,033 | 3.5 | 8,583 | 2.3 | 8,583 | 15.7 | 80 | 3,174 |
| Acajutla: 34,000 DWT | 2006 | 362,100 | 6.0 | 10.0 | | 4.0 | 1,448 | 2.5 | 7.4 | | 4.9 | 1,774 | 10,033 | 4.5 | 8,583 | 2.4 | 8,583 | 15.9 | 70 | 3,293 |
| | 2007 | 376,500 | 6.0 | 10.0 | | 4.0 | 1,506 | 2.5 | 7.4 | | 4.9 | 1,845 | 10,033 | 5.6 | 8,583 | 2.6 | 8,583 | 16.2 | 61 | 3,412 |
| | 2008 | 390,900 | 6.0 | 10.0 | | 4.0 | 1,564 | 2.5 | 7.4 | | 4.9 | 1,915 | 10,033 | 6.6 | 8,583 | 2.7 | 8,583 | 16.4 | 51 | 3,530 |
| | 2009 | 405,300 | 6.0 | 10.0 | | 4.0 | 1,621 | 2.5 | 7.4 | | 4.9 | 1,986 | 10,033 | 7.7 | 8,583 | 2.9 | 8,583 | 16.7 | 42 | 3,649 |
| | 2010 | 419,700 | 6.0 | 10.0 | | 4.0 | 1,679 | 2.5 | 7.4 | | 4.9 | 2,057 | 10,033 | 8.7 | 8,583 | 3.0 | 8,583 | 16.9 | 32 | 3,767 |
| | 2011 | 435,180 | 6.0 | 10.0 | | 4.0 | 1,741 | 2.5 | 7.4 | | 4.9 | 2,132 | 10,033 | 9.6 | 8,583 | 4.2 | 8,583 | 29.4 | 120 | 3,993 |
| | 2012 | 450,660 | 6.0 | 10.0 | | 4.0 | 1,803 | 2.5 | 7.4 | | 4.9 | 2,208 | 10,033 | 10.4 | 8,583 | 5.4 | 8,583 | 41.9 | 209 | 4,220 |
| | 2013 | 466,140 | 6.0 | 10.0 | | 4.0 | 1,865 | 2.5 | 7.4 | | 4.9 | 2,284 | 10,033 | 11.3 | 8,583 | 6.7 | 8,583 | 54.5 | 297 | 4,446 |
| | 2014 | 481,620 | 6.0 | 10.0 | | 4.0 | 1,926 | 2.5 | 7.4 | | 4.9 | 2,360 | 10,033 | 12.1 | 8,583 | 7.9 | 8,583 | 67.0 | 385 | 4,672 |
| | 2015 | 497,100 | 6.0 | 10.0 | | 4.0 | 1,988 | 2.5 | 7.4 | | 4.9 | 2,436 | 10,033 | 13.0 | 8,583 | 9.1 | 8,583 | 79.5 | 474 | 4,898 |
| | 2016 | 516,556 | 6.0 | 10.0 | | 4.0 | 2,066 | 2.5 | 7.4 | | 4.9 | 2,531 | 10,033 | 14.7 | 8,583 | 10.7 | 8,583 | 81.8 | 463 | 5,060 |
| | 2017 | 536,012 | 6.0 | 10.0 | | 4.0 | 2,144 | 2.5 | 7.4 | | 4.9 | 2,626 | 10,033 | 16.5 | 8,583 | 12.3 | 8,583 | 84.2 | 451 | 5,222 |
| | 2018 | 555,467 | 6.0 | 10.0 | | 4.0 | 2,222 | 2.5 | 7.4 | | 4.9 | 2,722 | 10,033 | 15.0 | 8,583 | 13.9 | 8,583 | 86.5 | 473 | 5,416 |
| | 2019 | 574,923 | 6.0 | 10.0 | | 4.0 | 2,300 | 2.5 | 7.4 | | 4.9 | 2,817 | 10,033 | 26.7 | 8,583 | 15.5 | 8,583 | 88.9 | 362 | 5,479 |
| | 2020 | 594,379 | 6.0 | 10.0 | | 4.0 | 2,378 | 2.5 | 7.4 | | 4.9 | 2,912 | 10,033 | 20.1 | 8,583 | 17.1 | 8,583 | 91.2 | 434 | 5,724 |
| | 2021 | 617,642 | 6.0 | 10.0 | | 4.0 | 2,471 | 2.5 | 7.4 | | 4.9 | 3,026 | 10,033 | 23.3 | 8,583 | 24.2 | 8,583 | 138.7 | 748 | 6,245 |
| | 2022 | 640,905 | 6.0 | 10.0 | | 4.0 | 2,564 | 2.5 | 7.4 | | 4.9 | 3,140 | 10,033 | 26.6 | 8,583 | 31.3 | 8,583 | 158.9 | 828 | 6,532 |
| | 2023 | 664,168 | 6.0 | 10.0 | | 4.0 | 2,657 | 2.5 | 7.4 | | 4.9 | 3,254 | 10,033 | 29.8 | 8,583 | 38.5 | 8,583 | 258.1 | 1,586 | 7,497 |
| | 2024 | 687,431 | 6.0 | 10.0 | | 4.0 | 2,750 | 2.5 | 7.4 | | 4.9 | 3,368 | 10,033 | 33.1 | 8,583 | 45.6 | 8,583 | 266.2 | 1,562 | 7,680 |
| | 2025 | 710,694 | 6.0 | 10.0 | | 4.0 | 2,843 | 2.5 | 7.4 | | 4.9 | 3,482 | 10,033 | 36.3 | 8,583 | 52.7 | 8,583 | 274.3 | 1,538 | 7,863 |
| With case: MPT saturation | 2026 | 738,510 | 6.0 | 10.0 | | 4.0 | 2,954 | 2.5 | 7.4 | | 4.9 | 3,619 | 10,033 | 41.8 | 8,583 | 103.7 | 8,583 | 289.0 | 1,171 | 7,744 |
| | 2027 | 738,510 | 6.0 | 10.0 | | 4.0 | 2,954 | 2.5 | 7.4 | | 4.9 | 3,619 | 10,033 | 41.8 | 8,583 | 103.7 | 8,583 | 289.0 | 1,171 | 7,744 |
| | 2028 | 738,510 | 6.0 | 10.0 | | 4.0 | 2,954 | 2.5 | 7.4 | | 4.9 | 3,619 | 10,033 | 41.8 | 8,583 | 103.7 | 8,583 | 289.0 | 1,171 | 7,744 |
| | 2029 | 738,510 | 6.0 | 10.0 | | 4.0 | 2,954 | 2.5 | 7.4 | | 4.9 | 3,619 | 10,033 | 41.8 | 8,583 | 103.7 | 8,583 | 289.0 | 1,171 | 7,744 |
| Without case: cereals saturation | 2030 | 738,510 | 6.0 | 10.0 | | 4.0 | 2,954 | 2.5 | 7.4 | | 4.9 | 3,619 | 10,033 | 41.8 | 8,583 | 103.7 | 8,583 | 289.0 | 1,171 | 7,744 |
| | 2031 | 738,510 | 6.0 | 10.0 | | 4.0 | 2,954 | 2.5 | 7.4 | | 4.9 | 3,619 | 10,033 | 41.8 | 8,583 | 103.7 | 8,583 | 289.0 | 1,171 | 7,744 |
| | 2032 | 738,510 | 6.0 | 10.0 | | 4.0 | 2,954 | 2.5 | 7.4 | | 4.9 | 3,619 | 10,033 | 41.8 | 8,583 | 103.7 | 8,583 | 289.0 | 1,171 | 7,744 |

*Note (1): "With" and "Without in the heading of the table mean "with-the project" case and "without-the project" case, respective*

**Table H.1.3 Economic Benefits Generated in Fertilizer Transport**

| Remarks in port saturation | Year | Volumme | Ship transport cost (sea navigation + berth staying) | | | | | Land Trasport Cost | | | | | Offshore Ship Waiting Cost | | | | | | | Total benefits |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | With (La Union) | Without (Acajutla) | Without (Quetzal) | Difference (benefit) | Total bebefits | With (La Union) | Without (Acajutla) | Without (Quetzal) | Difference (benefit) | Total bebefits | With (La Union) | | With (Acajutla) | | Without (Acajutla) | | Total bebefit | |
| | | MT | US$/MT | US$/MT | US$/MT | US$/MT | '000 US$ | US$/MT | US$/MT | US$/MT | US$/MT | '000 US$ | US$/vessel/day | toal days | US$/vessel/day | toal days | US$/vessel/day | toal days | '000 US$ | |
| | | A | B | C | D | E=C-B | F=AxE | G | H | I | J=H-G | K=JxA | L | M | N | O | P | Q | R=PxQ-NxO-LxM | S=F+K+R |
| La Union: 26,000 DWT | 2005 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 11.3 | 7,942 | 1.3 | 7,942 | 2.8 | -78 | 691 |
| Acajutla: 26,000 DWT | 2006 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 12.4 | 7,942 | 1.1 | 7,942 | 2.6 | -87 | 682 |
| | 2007 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 13.6 | 7,942 | 0.9 | 7,942 | 2.4 | -96 | 673 |
| | 2008 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 14.7 | 7,942 | 0.7 | 7,942 | 2.3 | -105 | 664 |
| | 2009 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 15.9 | 7,942 | 0.5 | 7,942 | 2.1 | -113 | 655 |
| | 2010 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 17.0 | 7,942 | 0.3 | 7,942 | 1.9 | -122 | 646 |
| | 2011 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 16.2 | 7,942 | 1.1 | 7,942 | 3.7 | -108 | 660 |
| | 2012 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 15.5 | 7,942 | 1.9 | 7,942 | 5.5 | -94 | 674 |
| | 2013 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 14.7 | 7,942 | 2.6 | 7,942 | 7.2 | -80 | 688 |
| | 2014 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 14.0 | 7,942 | 3.4 | 7,942 | 9.0 | -66 | 702 |
| | 2015 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 13.2 | 7,942 | 4.2 | 7,942 | 10.8 | -52 | 716 |
| | 2016 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 13.9 | 7,942 | 4.4 | 7,942 | 15.5 | -22 | 747 |
| | 2017 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 14.5 | 7,942 | 4.5 | 7,942 | 20.2 | 9 | 778 |
| | 2018 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 15.2 | 7,942 | 4.7 | 7,942 | 24.9 | 40 | 809 |
| | 2019 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 15.8 | 7,942 | 4.8 | 7,942 | 29.6 | 71 | 840 |
| | 2020 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 16.5 | 7,942 | 5.0 | 7,942 | 34.3 | 102 | 870 |
| | 2021 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 17.1 | 7,942 | 7.2 | 7,942 | 73.7 | 393 | 1,161 |
| | 2022 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 17.7 | 7,942 | 9.3 | 7,942 | 74.4 | 377 | 1,145 |
| | 2023 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 18.2 | 7,942 | 11.5 | 7,942 | 125.1 | 757 | 1,526 |
| | 2024 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 18.8 | 7,942 | 13.6 | 7,942 | 251.1 | 1,736 | 2,505 |
| Without case: fertilizer saturatic | 2025 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 19.4 | 7,942 | 15.8 | 7,942 | 377.1 | 2,715 | 3,484 |
| With case: MPT saturation | 2026 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 28.5 | 7,942 | 39.5 | 7,942 | 377.1 | 2,455 | 3,223 |
| | 2027 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 28.5 | 7,942 | 39.5 | 7,942 | 377.1 | 2,455 | 3,223 |
| | 2028 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 28.5 | 7,942 | 39.5 | 7,942 | 377.1 | 2,455 | 3,223 |
| | 2029 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 28.5 | 7,942 | 39.5 | 7,942 | 377.1 | 2,455 | 3,223 |
| | 2030 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 28.5 | 7,942 | 39.5 | 7,942 | 377.1 | 2,455 | 3,223 |
| | 2031 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 28.5 | 7,942 | 39.5 | 7,942 | 377.1 | 2,455 | 3,223 |
| | 2032 | 105,300 | 20.8 | 23.2 | | 2.4 | 253 | 2.5 | 7.4 | | 4.9 | 516 | 7,942 | 28.5 | 7,942 | 39.5 | 7,942 | 377.1 | 2,455 | 3,223 |

Note (1): "With" and "Without in the heading of the table mean "with-the project" case and "without-the project" case, respectively

**Table H.1.4 Economic Benefits Generated in Iron & Steel Products Transport**

| Remarks in port saturation | Year | Volumme | Ship transport cost (sea navigation + berth staying) | | | | | Land Trasport Cost | | | | | Offshore Ship Waiting Cost | | | | | | | Total benefits |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | With (La Union) | Without (Acajutla) | Without (Quetzal) | Difference (benefit) | Total bebefits | With (La Union) | Without (Acajutla) | Without (Quetzal) | Difference (benefit) | Total bebefits | With (La Union) | | With (Acajutla) | | Without (Acajutla) | | Total bebefit | |
| | | MT | US$/MT | US$/MT | US$/MT | US$/MT | '000 US$ | US$/MT | US$/MT | US$/MT | US$/MT | '000 US$ | US$/vessel /day | toal days | US$/vessel /day | toal days | US$/vessel /day | toal days | '000 US$ | |
| | | A | B | C | D | E = Cxa+Dx(1-a)-B | F = A x E | G | H | I | J = Hxa+Ix(1-a)-G | K= J x A | L | M | N | O | P | Q | R=PxQ-NxO-LxM | S = F+ K +R |
| La Union: 32,000 DW | 2005 | 37,200 | 24.0 | 24.3 | | 0.3 | 11 | 2.5 | 7.4 | | 4.9 | 182 | 8,450 | 3.9 | 8,450 | 4.2 | 8,450 | 5.3 | -24 | 170 |
| Acajutla: 32,000 DW | 2006 | 40,860 | 24.0 | 24.3 | | 0.3 | 12 | 2.5 | 7.4 | | 4.9 | 200 | 8,450 | 6.5 | 8,450 | 5.3 | 8,450 | 8.4 | -29 | 183 |
| | 2007 | 44,520 | 24.0 | 24.3 | | 0.3 | 13 | 2.5 | 7.4 | | 4.9 | 218 | 8,450 | 9.2 | 8,450 | 6.4 | 8,450 | 11.5 | -35 | 197 |
| | 2008 | 48,180 | 24.0 | 24.3 | | 0.3 | 14 | 2.5 | 7.4 | | 4.9 | 236 | 8,450 | 11.8 | 8,450 | 7.6 | 8,450 | 14.6 | -40 | 210 |
| | 2009 | 51,840 | 24.0 | 24.3 | | 0.3 | 16 | 2.5 | 7.4 | | 4.9 | 254 | 8,450 | 14.5 | 8,450 | 8.7 | 8,450 | 17.7 | -46 | 224 |
| | 2010 | 55,500 | 24.0 | 24.3 | | 0.3 | 17 | 2.5 | 7.4 | | 4.9 | 272 | 8,450 | 17.1 | 8,450 | 9.8 | 8,450 | 20.8 | -52 | 237 |
| | 2011 | 60,180 | 24.0 | 24.3 | | 0.3 | 18 | 2.5 | 7.4 | | 4.9 | 295 | 8,450 | 18.6 | 8,450 | 12.0 | 8,450 | 32.4 | 15 | 328 |
| | 2012 | 64,860 | 24.0 | 24.3 | | 0.3 | 19 | 2.5 | 7.4 | | 4.9 | 318 | 8,450 | 20.2 | 8,450 | 14.1 | 8,450 | 44.0 | 82 | 420 |
| | 2013 | 69,540 | 24.0 | 24.3 | | 0.3 | 21 | 2.5 | 7.4 | | 4.9 | 341 | 8,450 | 21.7 | 8,450 | 16.3 | 8,450 | 55.7 | 149 | 511 |
| | 2014 | 74,220 | 24.0 | 24.3 | | 0.3 | 22 | 2.5 | 7.4 | | 4.9 | 364 | 8,450 | 23.3 | 8,450 | 18.4 | 8,450 | 67.3 | 216 | 602 |
| | 2015 | 78,900 | 24.0 | 24.3 | | 0.3 | 24 | 2.5 | 7.4 | | 4.9 | 387 | 8,450 | 24.8 | 8,450 | 20.6 | 8,450 | 78.9 | 283 | 693 |
| | 2016 | 86,101 | 24.0 | 24.3 | | 0.3 | 26 | 2.5 | 7.4 | | 4.9 | 422 | 8,450 | 9.8 | 8,450 | 29.2 | 8,450 | 152.7 | 961 | 1,408 |
| | 2017 | 93,303 | 24.0 | 24.3 | | 0.3 | 28 | 2.5 | 7.4 | | 4.9 | 457 | 8,450 | 29.9 | 8,450 | 37.8 | 8,450 | 226.4 | 1,342 | 1,827 |
| | 2018 | 100,504 | 24.0 | 24.3 | | 0.3 | 30 | 2.5 | 7.4 | | 4.9 | 492 | 8,450 | 33.7 | 8,450 | 46.3 | 8,450 | 300.2 | 1,860 | 2,383 |
| | 2019 | 107,705 | 24.0 | 24.3 | | 0.3 | 32 | 2.5 | 7.4 | | 4.9 | 528 | 8,450 | 32.7 | 8,450 | 54.9 | 8,450 | 373.9 | 2,419 | 2,979 |
| | 2020 | 114,906 | 24.0 | 24.3 | | 0.3 | 34 | 2.5 | 7.4 | | 4.9 | 563 | 8,450 | 22.4 | 8,450 | 63.5 | 8,450 | 447.7 | 3,057 | 3,655 |
| Without iron/steel saturati | 2021 | 125,394 | 24.0 | 24.3 | | 0.3 | 38 | 2.5 | 7.4 | | 4.9 | 614 | 8,450 | 43.6 | 8,450 | 112.3 | 8,450 | 1,094.5 | 7,932 | 8,584 |
| Start to Divert to Quetzal | 2022 | 135,882 | 24.0 | 24.3 | 36.6 | 1.2 | 169 | 2.5 | 7.4 | 10.1 | 5.1 | 694 | 8,450 | 64.8 | 8,450 | 161.0 | 8,450 | 1,094.5 | 7,341 | 8,204 |
| | 2023 | 146,369 | 24.0 | 24.3 | 36.6 | 2.1 | 301 | 2.5 | 7.4 | 10.1 | 5.3 | 774 | 8,450 | 86.0 | 8,450 | 209.8 | 8,450 | 1,094.5 | 6,749 | 7,824 |
| With iron/steel saturation | 2024 | 156,857 | 24.0 | 24.3 | 36.6 | 2.8 | 432 | 2.5 | 7.4 | 10.1 | 5.4 | 854 | 8,450 | 107.2 | 8,450 | 258.5 | 8,450 | 1,094.5 | 6,158 | 7,444 |
| Start to Divert to La Union | 2025 | 167,344 | 24.0 | 24.3 | 36.6 | 3.4 | 564 | 2.5 | 7.4 | 10.1 | 5.6 | 933 | 8,450 | 128.4 | 8,450 | 258.5 | 8,450 | 1,094.5 | 5,979 | 7,477 |
| With case: La Union MPT | 2026 | 182,618 | 24.0 | 24.3 | 36.6 | 4.1 | 756 | 2.5 | 7.4 | 10.1 | 5.7 | 1,049 | 8,450 | 239.6 | 8,450 | 258.5 | 8,450 | 1,094.5 | 5,040 | 6,845 |
| | 2027 | 182,618 | 24.0 | 24.3 | 36.6 | 4.1 | 756 | 2.5 | 7.4 | 10.1 | 5.7 | 1,049 | 8,450 | 239.6 | 8,450 | 258.5 | 8,450 | 1,094.5 | 5,040 | 6,845 |
| | 2028 | 182,618 | 24.0 | 24.3 | 36.6 | 4.1 | 756 | 2.5 | 7.4 | 10.1 | 5.7 | 1,049 | 8,450 | 239.6 | 8,450 | 258.5 | 8,450 | 1,094.5 | 5,040 | 6,845 |
| | 2029 | 182,618 | 24.0 | 24.3 | 36.6 | 4.1 | 756 | 2.5 | 7.4 | 10.1 | 5.7 | 1,049 | 8,450 | 239.6 | 8,450 | 258.5 | 8,450 | 1,094.5 | 5,040 | 6,845 |
| | 2030 | 182,618 | 24.0 | 24.3 | 36.6 | 4.1 | 756 | 2.5 | 7.4 | 10.1 | 5.7 | 1,049 | 8,450 | 239.6 | 8,450 | 258.5 | 8,450 | 1,094.5 | 5,040 | 6,845 |
| | 2031 | 182,618 | 24.0 | 24.3 | 36.6 | 4.1 | 756 | 2.5 | 7.4 | 10.1 | 5.7 | 1,049 | 8,450 | 239.6 | 8,450 | 258.5 | 8,450 | 1,094.5 | 5,040 | 6,845 |
| | 2032 | 182,618 | 24.0 | 24.3 | 36.6 | 4.1 | 756 | 2.5 | 7.4 | 10.1 | 5.7 | 1,049 | 8,450 | 239.6 | 8,450 | 258.5 | 8,450 | 1,094.5 | 5,040 | 6,845 |

Note (1): "With" and "Without in the heading of the table mean "with-the project" case and "without-the project" case, respective

Note (2): In Colume "D" from the year 2022, payment of US$ 2.6+9.35 to Quetzal Port for stevedoring and haulage is added to ship transport cost

**Table H1.5 Economic Benefits Generated in Raw Sugar Transport**

| Remarks in port saturation | Year | Volumme | Ship transport cost (sea navigation + berth staying' | | | | | Land Trasport Cost | | | | | Offshore Ship Waiting Cost | | | | | | | Total benefits |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | With (La Union) | Without (Acajutla) | Without (Quetzal) | Difference (benefit) | Total bebefits | With (La Union) | Without (Acajutla) | Without (Quetzal) | Difference (benefit) | Total bebefits | With (La Union) | | With (Acajutla) | | Without (Acajutla) | | Total bebefit | |
| | | MT | US$/MT | US$/MT | US$/MT | US$/MT | '000 US$ | US$/MT | US$/MT | US$/MT | US$/MT | '000 US$ | S$/vessel/d | toal days | S$/vessel/d | toal days | S$/vessel/d | toal days | '000 US$ | |
| | | A | B | C | D | E=C-B | F=AxE | G | H | I | J=H-G | K=JxA | L | M | N | O | P | Q | R=PxQ-NxO-LxM | S=F+K+R |
| La Union: 26,000 DW | 2005 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 8.3 | 7,942 | 0.0 | 7,942 | 0.0 | -66 | 372 |
| Acajutla: 26,000 DW | 2006 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 8.3 | 7,942 | 0.0 | 7,942 | 0.0 | -66 | 372 |
| | 2007 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 8.3 | 7,942 | 0.0 | 7,942 | 0.0 | -66 | 372 |
| | 2008 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 8.3 | 7,942 | 0.0 | 7,942 | 0.0 | -66 | 372 |
| | 2009 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 8.3 | 7,942 | 0.0 | 7,942 | 0.0 | -66 | 372 |
| | 2010 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 8.3 | 7,942 | 0.0 | 7,942 | 0.0 | -66 | 372 |
| | 2011 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 9.0 | 7,942 | 0.0 | 7,942 | 0.0 | -72 | 366 |
| | 2012 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 9.7 | 7,942 | 0.0 | 7,942 | 0.0 | -77 | 361 |
| | 2013 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 10.5 | 7,942 | 0.0 | 7,942 | 0.0 | -83 | 355 |
| | 2014 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 11.2 | 7,942 | 0.0 | 7,942 | 0.0 | -89 | 349 |
| | 2015 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 11.9 | 7,942 | 0.0 | 7,942 | 0.0 | -95 | 343 |
| | 2016 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 11.9 | 7,942 | 0.0 | 7,942 | 0.0 | -95 | 343 |
| | 2017 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 7.9 | 7,942 | 0.0 | 7,942 | 0.0 | -63 | 375 |
| | 2018 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 8.2 | 7,942 | 0.0 | 7,942 | 0.0 | -65 | 373 |
| | 2019 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 2.9 | 7,942 | 0.0 | 7,942 | 0.0 | -23 | 415 |
| | 2020 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 9.3 | 7,942 | 0.0 | 7,942 | 0.0 | -74 | 364 |
| | 2021 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 8.4 | 7,942 | 0.0 | 7,942 | 0.0 | -67 | 371 |
| | 2022 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 7.6 | 7,942 | 0.0 | 7,942 | 0.0 | -60 | 378 |
| | 2023 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 6.7 | 7,942 | 0.0 | 7,942 | 0.0 | -53 | 385 |
| | 2024 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 5.9 | 7,942 | 0.0 | 7,942 | 0.0 | -47 | 391 |
| | 2025 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 5.0 | 7,942 | 0.0 | 7,942 | 0.0 | -40 | 398 |
| With case: La Union satur | 2026 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 12.1 | 7,942 | 0.0 | 7,942 | 0.0 | -96 | 342 |
| | 2027 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 12.1 | 7,942 | 0.0 | 7,942 | 0.0 | -96 | 342 |
| | 2028 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 12.1 | 7,942 | 0.0 | 7,942 | 0.0 | -96 | 342 |
| | 2029 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 12.1 | 7,942 | 0.0 | 7,942 | 0.0 | -96 | 342 |
| | 2030 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 12.1 | 7,942 | 0.0 | 7,942 | 0.0 | -96 | 342 |
| | 2031 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 12.1 | 7,942 | 0.0 | 7,942 | 0.0 | -96 | 342 |
| | 2032 | 60,000 | 26.8 | 29.2 | | 2.4 | 144 | 2.5 | 7.4 | | 4.9 | 294 | 7,942 | 12.1 | 7,942 | 0.0 | 7,942 | 0.0 | -96 | 342 |

Note (1): "With" and "Without in the heading of the table mean "with-the project" case and "without-the project" case, respective

**Table H.1.6 Summary of Benefits Generated from the Project in Handling Containers at La Union Port**

| Year | La Union Total Volume | Salvadorian local containers | | | | | | Foreign containers to transit La Union Port | | | | Bebefits Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Currently via Acajutla port | | Currently transitting Quetzal Port | | Local total | | Currently via their own foreign ports | Currently transit-ing Quetzal Port | Transit total | | |
| | | Volume | Benefits | Volume | Benefits | Volume | Benefits | Volume | Volume | Volume | Benefits | |
| | TEUs | TEUs | '000 US$ | TEUs | '000 US$ | TEUs | '000 US$ | TEUs | TEUs | TEUs | '000 US$ | '000 US$ |
| 2005 | 120,60 | 24,300 | 2,227 | 41,887 | 5,929 | 66,187 | 8,156 | 40,000 | 14,413 | 54,413 | 4,829 | 12,985 |
| 2006 | 133,400 | 27,180 | 2,473 | 46,292 | 6,434 | 73,472 | 8,907 | 44,000 | 15,928 | 59,928 | 5,224 | 14,130 |
| 2007 | 146,200 | 30,060 | 2,719 | 50,696 | 6,926 | 80,756 | 9,645 | 48,000 | 17,444 | 65,444 | 5,608 | 15,253 |
| 2008 | 159,000 | 32,940 | 2,964 | 55,101 | 7,407 | 88,041 | 10,372 | 52,000 | 18,959 | 70,959 | 5,983 | 16,355 |
| 2009 | 171,800 | 35,820 | 3,210 | 59,505 | 7,878 | 95,325 | 11,088 | 56,000 | 20,475 | 76,475 | 6,350 | 17,438 |
| 2010 | 184,60 | 38,700 | 3,455 | 63,910 | 8,339 | 102,61 | 11,794 | 60,000 | 21,990 | 81,990 | 6,708 | 18,502 |
| 2011 | 202,800 | 42,960 | 3,817 | 70,710 | 9,199 | 113,670 | 13,016 | 64,800 | 24,330 | 89,130 | 7,275 | 20,291 |
| 2012 | 221,000 | 47,220 | 4,179 | 77,510 | 10,059 | 124,730 | 14,238 | 69,600 | 26,670 | 96,270 | 7,842 | 22,080 |
| 2013 | 239,200 | 51,480 | 4,541 | 84,310 | 10,918 | 135,790 | 15,459 | 74,400 | 29,010 | 103,410 | 8,409 | 23,868 |
| 2014 | 257,400 | 55,740 | 4,902 | 91,110 | 11,777 | 146,850 | 16,679 | 79,200 | 31,350 | 110,550 | 8,977 | 25,656 |
| 2015 | 275,60 | 60,000 | 5,263 | 97,910 | 12,636 | 157,91 | 17,900 | 84,000 | 33,690 | 117,69 | 9,544 | 27,444 |
| 2016 | 303,805 | 65,676 | 5,761 | 106,587 | 13,756 | 172,263 | 19,517 | 90,469 | 41,073 | 131,542 | 10,668 | 30,185 |
| 2017 | 332,010 | 71,889 | 6,306 | 116,032 | 14,975 | 187,921 | 21,281 | 97,437 | 46,652 | 144,089 | 11,685 | 32,966 |
| 2018 | 360,215 | 78,689 | 6,903 | 126,314 | 16,302 | 205,004 | 23,205 | 104,941 | 50,270 | 155,211 | 12,587 | 35,792 |
| 2019 | 360,215 | 78,689 | 6,903 | 126,314 | 16,302 | 205,004 | 23,205 | 104,941 | 50,270 | 155,211 | 12,587 | 35,792 |
| 2020 | 360,215 | 78,689 | 6,903 | 126,314 | 16,302 | 205,004 | 23,205 | 104,941 | 50,270 | 155,211 | 12,587 | 35,792 |
| 2021 | 360,215 | 78,689 | 6,903 | 126,314 | 16,302 | 205,004 | 23,205 | 104,941 | 50,270 | 155,211 | 12,587 | 35,792 |
| 2022 | 360,215 | 78,689 | 6,903 | 126,314 | 16,302 | 205,004 | 23,205 | 104,941 | 50,270 | 155,211 | 12,587 | 35,792 |
| 2023 | 360,215 | 78,689 | 6,903 | 126,314 | 16,302 | 205,004 | 23,205 | 104,941 | 50,270 | 155,211 | 12,587 | 35,792 |
| 2024 | 360,215 | 78,689 | 6,903 | 126,314 | 16,302 | 205,004 | 23,205 | 104,941 | 50,270 | 155,211 | 12,587 | 35,792 |
| 2025 | 360,215 | 78,689 | 6,903 | 126,314 | 16,302 | 205,004 | 23,205 | 104,941 | 50,270 | 155,211 | 12,587 | 35,792 |
| 2026 | 360,215 | 78,689 | 6,903 | 126,314 | 16,302 | 205,004 | 23,205 | 104,941 | 50,270 | 155,211 | 12,587 | 35,792 |
| 2027 | 360,215 | 78,689 | 6,903 | 126,314 | 16,302 | 205,004 | 23,205 | 104,941 | 50,270 | 155,211 | 12,587 | 35,792 |
| 2028 | 360,215 | 78,689 | 6,903 | 126,314 | 16,302 | 205,004 | 23,205 | 104,941 | 50,270 | 155,211 | 12,587 | 35,792 |
| 2029 | 360,215 | 78,689 | 6,903 | 126,314 | 16,302 | 205,004 | 23,205 | 104,941 | 50,270 | 155,211 | 12,587 | 35,792 |
| 2030 | 360,215 | 78,689 | 6,903 | 126,314 | 16,302 | 205,004 | 23,205 | 104,941 | 50,270 | 155,211 | 12,587 | 35,792 |
| 2031 | 360,215 | 78,689 | 6,903 | 126,314 | 16,302 | 205,004 | 23,205 | 104,941 | 50,270 | 155,211 | 12,587 | 35,792 |
| 2032 | 360,215 | 78,689 | 6,903 | 126,314 | 16,302 | 205,004 | 23,205 | 104,941 | 50,270 | 155,211 | 12,587 | 35,792 |

Note: In EIRR estimation, the benfits from the latter half of the year 2006 when operations will start to 2032 was considred.

**Table H.1.7 Summary of Benefits Generated from the Project in Handling Container**

| Year | La Union Total (Local + Transit) | | | | | | | Salvadorian local container | | | | | | | | | Foreign containers to transit La Union Por | | | | | | | | Total bebefit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Currently via Acajutla port | | | Currently transitting Quetzal Port | | | Local total | | | Currently via foreign ports | Currently transitt-ing | Transit total | | | | | | |
| | Laden + Empty | Laden | Laden | Empty | TEU/ Box | Laden | Empty | Laden + Empty | Laden | Total bebefit | Laden + Empty | Laden | Total bebefit | Laden + Empty | Laden | Total bebefit | Laden + Empty | Laden + Empty | Laden + Empty | Laden | Empty | Laden | Empty | Total bebefit | |
| | TEUs | % | TEUs | TEUs | | Boxes | Boxes | TEUs | TEUs | '000 US$ | TEUs | TEUs | '000 US$ | TEUs | TEUs | '000 US$ | TEUs | TEUs | TEUs | TEUs | TEUs | Boxes | Boxes | '000 US$ | '000 US$ |
| 2005 | 120,600 | 0.612 | 73,784 | 46,816 | 1.71 | 43,121 | 27,360 | 24,300 | 14,867 | 2,227 | 41,887 | 25,627 | 5,929 | 66,187 | 40,494 | 8,156 | 40,000 | 14,413 | 54,413 | 33,290 | 21,123 | 19,455 | 12,345 | 4,829 | 12,985 |
| 2006 | 133,400 | 0.607 | 81,031 | 52,369 | 1.75 | 46,176 | 29,843 | 27,180 | 16,510 | 2,473 | 46,292 | 28,119 | 6,434 | 73,472 | 44,629 | 8,907 | 44,000 | 15,928 | 59,928 | 36,402 | 23,526 | 20,744 | 13,407 | 5,224 | 14,130 |
| 2007 | 146,200 | 0.604 | 88,277 | 57,923 | 1.80 | 49,083 | 32,206 | 30,060 | 18,151 | 2,719 | 50,696 | 30,611 | 6,926 | 80,756 | 48,761 | 9,645 | 48,000 | 17,444 | 65,444 | 39,516 | 25,928 | 21,971 | 14,416 | 5,608 | 15,253 |
| 2008 | 159,000 | 0.601 | 95,524 | 63,476 | 1.84 | 51,852 | 34,456 | 32,940 | 19,790 | 2,964 | 55,101 | 33,103 | 7,407 | 88,041 | 52,893 | 10,372 | 52,000 | 18,959 | 70,959 | 42,631 | 28,328 | 23,141 | 15,377 | 5,983 | 16,355 |
| 2009 | 171,800 | 0.598 | 102,770 | 69,030 | 1.89 | 54,493 | 36,602 | 35,820 | 21,427 | 3,210 | 59,505 | 35,596 | 7,878 | 95,325 | 57,023 | 11,088 | 56,000 | 20,475 | 76,475 | 45,747 | 30,728 | 24,257 | 16,293 | 6,350 | 17,438 |
| 2010 | 184,600 | 0.596 | 110,017 | 74,583 | 1.93 | 57,014 | 38,651 | 38,700 | 23,064 | 3,455 | 63,910 | 38,089 | 8,339 | 102,610 | 61,153 | 11,794 | 60,000 | 21,990 | 81,990 | 48,864 | 33,126 | 25,323 | 17,167 | 6,708 | 18,502 |
| 2011 | 202,800 | 0.593 | 120,292 | 82,508 | 1.93 | 62,339 | 42,758 | 42,960 | 25,482 | 3,817 | 70,710 | 41,942 | 9,199 | 113,670 | 67,424 | 13,016 | 64,800 | 24,330 | 89,130 | 52,868 | 36,262 | 27,398 | 18,792 | 7,275 | 20,291 |
| 2012 | 221,000 | 0.591 | 130,566 | 90,434 | 1.93 | 67,663 | 46,866 | 47,220 | 27,897 | 4,179 | 77,510 | 45,793 | 10,059 | 124,730 | 73,690 | 14,238 | 69,600 | 26,670 | 96,270 | 56,876 | 39,394 | 29,475 | 20,415 | 7,842 | 22,080 |
| 2013 | 239,200 | 0.589 | 140,841 | 98,359 | 1.93 | 72,988 | 50,973 | 51,480 | 30,311 | 4,541 | 84,310 | 49,642 | 10,918 | 135,790 | 79,953 | 15,459 | 74,400 | 29,010 | 103,410 | 60,888 | 42,522 | 31,554 | 22,036 | 8,409 | 23,868 |
| 2014 | 257,400 | 0.587 | 151,115 | 106,285 | 1.93 | 78,313 | 55,080 | 55,740 | 32,724 | 4,902 | 91,110 | 53,489 | 11,777 | 146,850 | 86,213 | 16,679 | 79,200 | 31,350 | 110,550 | 64,902 | 45,648 | 33,634 | 23,656 | 8,977 | 25,656 |
| 2015 | 275,600 | 0.586 | 161,390 | 114,210 | 1.93 | 83,637 | 59,187 | 60,000 | 35,136 | 5,263 | 97,910 | 57,336 | 12,636 | 157,910 | 92,472 | 17,900 | 84,000 | 33,690 | 117,690 | 68,918 | 48,771 | 35,716 | 25,275 | 9,544 | 27,444 |
| 2016 | 303,805 | 0.586 | 177,907 | 125,898 | 1.93 | 92,197 | 65,244 | 65,676 | 38,459 | 5,761 | 106,587 | 62,417 | 13,756 | 172,263 | 100,876 | 19,517 | 90,469 | 41,073 | 131,542 | 77,031 | 54,512 | 39,920 | 28,250 | 10,668 | 30,185 |
| 2017 | 332,010 | 0.586 | 194,423 | 137,587 | 1.93 | 100,756 | 71,302 | 71,889 | 42,098 | 6,306 | 116,032 | 67,948 | 14,975 | 187,921 | 110,045 | 21,281 | 97,437 | 46,652 | 144,089 | 84,378 | 59,711 | 43,727 | 30,944 | 11,685 | 32,966 |
| 2018 | 360,215 | 0.586 | 210,940 | 149,275 | 1.93 | 109,316 | 77,359 | 78,689 | 46,080 | 6,903 | 126,314 | 73,969 | 16,302 | 205,004 | 120,049 | 23,205 | 104,941 | 50,270 | 155,211 | 90,891 | 64,320 | 47,102 | 33,333 | 12,587 | 35,792 |
| 2019 | 360,215 | 0.586 | 210,940 | 149,275 | 1.93 | 109,316 | 77,359 | 78,689 | 46,080 | 6,903 | 126,314 | 73,969 | 16,302 | 205,004 | 120,049 | 23,205 | 104,941 | 50,270 | 155,211 | 90,891 | 64,320 | 47,102 | 33,333 | 12,587 | 35,792 |
| 2020 | 360,215 | 0.586 | 210,940 | 149,275 | 1.93 | 109,316 | 77,359 | 78,689 | 46,080 | 6,903 | 126,314 | 73,969 | 16,302 | 205,004 | 120,049 | 23,205 | 104,941 | 50,270 | 155,211 | 90,891 | 64,320 | 47,102 | 33,333 | 12,587 | 35,792 |
| 2021 | 360,215 | 0.586 | 210,940 | 149,275 | 1.93 | 109,316 | 77,359 | 78,689 | 46,080 | 6,903 | 126,314 | 73,969 | 16,302 | 205,004 | 120,049 | 23,205 | 104,941 | 50,270 | 155,211 | 90,891 | 64,320 | 47,102 | 33,333 | 12,587 | 35,792 |
| 2022 | 360,215 | 0.586 | 210,940 | 149,275 | 1.93 | 109,316 | 77,359 | 78,689 | 46,080 | 6,903 | 126,314 | 73,969 | 16,302 | 205,004 | 120,049 | 23,205 | 104,941 | 50,270 | 155,211 | 90,891 | 64,320 | 47,102 | 33,333 | 12,587 | 35,792 |
| 2023 | 360,215 | 0.586 | 210,940 | 149,275 | 1.93 | 109,316 | 77,359 | 78,689 | 46,080 | 6,903 | 126,314 | 73,969 | 16,302 | 205,004 | 120,049 | 23,205 | 104,941 | 50,270 | 155,211 | 90,891 | 64,320 | 47,102 | 33,333 | 12,587 | 35,792 |
| 2024 | 360,215 | 0.586 | 210,940 | 149,275 | 1.93 | 109,316 | 77,359 | 78,689 | 46,080 | 6,903 | 126,314 | 73,969 | 16,302 | 205,004 | 120,049 | 23,205 | 104,941 | 50,270 | 155,211 | 90,891 | 64,320 | 47,102 | 33,333 | 12,587 | 35,792 |
| 2025 | 360,215 | 0.586 | 210,940 | 149,275 | 1.93 | 109,316 | 77,359 | 78,689 | 46,080 | 6,903 | 126,314 | 73,969 | 16,302 | 205,004 | 120,049 | 23,205 | 104,941 | 50,270 | 155,211 | 90,891 | 64,320 | 47,102 | 33,333 | 12,587 | 35,792 |
| 2026 | 360,215 | 0.586 | 210,940 | 149,275 | 1.93 | 109,316 | 77,359 | 78,689 | 46,080 | 6,903 | 126,314 | 73,969 | 16,302 | 205,004 | 120,049 | 23,205 | 104,941 | 50,270 | 155,211 | 90,891 | 64,320 | 47,102 | 33,333 | 12,587 | 35,792 |
| 2027 | 360,215 | 0.586 | 210,940 | 149,275 | 1.93 | 109,316 | 77,359 | 78,689 | 46,080 | 6,903 | 126,314 | 73,969 | 16,302 | 205,004 | 120,049 | 23,205 | 104,941 | 50,270 | 155,211 | 90,891 | 64,320 | 47,102 | 33,333 | 12,587 | 35,792 |
| 2028 | 360,215 | 0.586 | 210,940 | 149,275 | 1.93 | 109,316 | 77,359 | 78,689 | 46,080 | 6,903 | 126,314 | 73,969 | 16,302 | 205,004 | 120,049 | 23,205 | 104,941 | 50,270 | 155,211 | 90,891 | 64,320 | 47,102 | 33,333 | 12,587 | 35,792 |
| 2029 | 360,215 | 0.586 | 210,940 | 149,275 | 1.93 | 109,316 | 77,359 | 78,689 | 46,080 | 6,903 | 126,314 | 73,969 | 16,302 | 205,004 | 120,049 | 23,205 | 104,941 | 50,270 | 155,211 | 90,891 | 64,320 | 47,102 | 33,333 | 12,587 | 35,792 |
| 2030 | 360,215 | 0.586 | 210,940 | 149,275 | 1.93 | 109,316 | 77,359 | 78,689 | 46,080 | 6,903 | 126,314 | 73,969 | 16,302 | 205,004 | 120,049 | 23,205 | 104,941 | 50,270 | 155,211 | 90,891 | 64,320 | 47,102 | 33,333 | 12,587 | 35,792 |
| 2031 | 360,215 | 0.586 | 210,940 | 149,275 | 1.93 | 109,316 | 77,359 | 78,689 | 46,080 | 6,903 | 126,314 | 73,969 | 16,302 | 205,004 | 120,049 | 23,205 | 104,941 | 50,270 | 155,211 | 90,891 | 64,320 | 47,102 | 33,333 | 12,587 | 35,792 |
| 2032 | 360,215 | 0.586 | 210,940 | 149,275 | 1.93 | 109,316 | 77,359 | 78,689 | 46,080 | 6,903 | 126,314 | 73,969 | 16,302 | 205,004 | 120,049 | 23,205 | 104,941 | 50,270 | 155,211 | 90,891 | 64,320 | 47,102 | 33,333 | 12,587 | 35,792 |

**Table H.1.8 Economic Benefits Generated in Container Transport (currently via Acajutla pattern)**

| Remarks in port saturation | Year | Volume (Laden) | Ship transport cost (sea navigation + berth staying | | | | | | | Land Trasport Cost | | | | | Total bebefit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | With (La Union) | Without (Acajutla) | Without (Quetzal) | Difference (benefit) | Total bebefit | Contribution | Total bebefit | With (La Union) | Without (Acajutla) | Without (Quetzal) | Difference (benefit) | Total bebefit | |
| | | TEUs | Unit price $/TEU | Unit price $/TEU | Unit price $/TEU | Unit price $/TEU | '000 US$ | % | '000 US$ | Unit price $/TEU | Unit price $/TEU | Unit price $/TEU | Unit price $/TEU | '000 US$ | '000 US$ |
| | | A | B | C | D | E = C+D-B | F = A x E | F1 | F2 | G | H | I | J = H+I-G | K = A x I | L = F+ K |
| | 2005 | 14,867 | 1,365.0 | 1,664.0 | | 299.0 | 4,445 | 0.5 | 2,223 | 72.3 | 72.6 | | 0.3 | 4 | 2,227 |
| | 2006 | 16,510 | 1,365.0 | 1,664.0 | | 299.0 | 4,936 | 0.5 | 2,468 | 72.3 | 72.6 | | 0.3 | 5 | 2,473 |
| | 2007 | 18,151 | 1,365.0 | 1,664.0 | | 299.0 | 5,427 | 0.5 | 2,714 | 72.3 | 72.6 | | 0.3 | 5 | 2,719 |
| | 2008 | 19,790 | 1,365.0 | 1,664.0 | | 299.0 | 5,917 | 0.5 | 2,959 | 72.3 | 72.6 | | 0.3 | 6 | 2,964 |
| | 2009 | 21,427 | 1,365.0 | 1,664.0 | | 299.0 | 6,407 | 0.5 | 3,203 | 72.3 | 72.6 | | 0.3 | 6 | 3,210 |
| | 2010 | 23,064 | 1,365.0 | 1,664.0 | | 299.0 | 6,896 | 0.5 | 3,448 | 72.3 | 72.6 | | 0.3 | 7 | 3,455 |
| | 2011 | 25,482 | 1,365.0 | 1,664.0 | | 299.0 | 7,619 | 0.5 | 3,810 | 72.3 | 72.6 | | 0.3 | 8 | 3,817 |
| | 2012 | 27,897 | 1,365.0 | 1,664.0 | | 299.0 | 8,341 | 0.5 | 4,171 | 72.3 | 72.6 | | 0.3 | 8 | 4,179 |
| | 2013 | 30,311 | 1,365.0 | 1,664.0 | | 299.0 | 9,063 | 0.5 | 4,532 | 72.3 | 72.6 | | 0.3 | 9 | 4,541 |
| | 2014 | 32,724 | 1,365.0 | 1,664.0 | | 299.0 | 9,784 | 0.5 | 4,892 | 72.3 | 72.6 | | 0.3 | 10 | 4,902 |
| | 2015 | 35,136 | 1,365.0 | 1,664.0 | | 299.0 | 10,506 | 0.5 | 5,253 | 72.3 | 72.6 | | 0.3 | 11 | 5,263 |
| | 2016 | 38,459 | 1,365.0 | 1,664.0 | | 299.0 | 11,499 | 0.5 | 5,750 | 72.3 | 72.6 | | 0.3 | 12 | 5,761 |
| | 2017 | 42,098 | 1,365.0 | 1,664.0 | | 299.0 | 12,587 | 0.5 | 6,294 | 72.3 | 72.6 | | 0.3 | 13 | 6,306 |
| With case: La Union saturati | 2018 | 46,080 | 1,365.0 | 1,664.0 | | 299.0 | 13,778 | 0.5 | 6,889 | 72.3 | 72.6 | | 0.3 | 14 | 6,903 |
| | 2019 | 46,080 | 1,365.0 | 1,664.0 | | 299.0 | 13,778 | 0.5 | 6,889 | 72.3 | 72.6 | | 0.3 | 14 | 6,903 |
| | 2020 | 46,080 | 1,365.0 | 1,664.0 | | 299.0 | 13,778 | 0.5 | 6,889 | 72.3 | 72.6 | | 0.3 | 14 | 6,903 |
| | 2021 | 46,080 | 1,365.0 | 1,664.0 | | 299.0 | 13,778 | 0.5 | 6,889 | 72.3 | 72.6 | | 0.3 | 14 | 6,903 |
| | 2022 | 46,080 | 1,365.0 | 1,664.0 | | 299.0 | 13,778 | 0.5 | 6,889 | 72.3 | 72.6 | | 0.3 | 14 | 6,903 |
| | 2023 | 46,080 | 1,365.0 | 1,664.0 | | 299.0 | 13,778 | 0.5 | 6,889 | 72.3 | 72.6 | | 0.3 | 14 | 6,903 |
| | 2024 | 46,080 | 1,365.0 | 1,664.0 | | 299.0 | 13,778 | 0.5 | 6,889 | 72.3 | 72.6 | | 0.3 | 14 | 6,903 |
| | 2025 | 46,080 | 1,365.0 | 1,664.0 | | 299.0 | 13,778 | 0.5 | 6,889 | 72.3 | 72.6 | | 0.3 | 14 | 6,903 |
| | 2026 | 46,080 | 1,365.0 | 1,664.0 | | 299.0 | 13,778 | 0.5 | 6,889 | 72.3 | 72.6 | | 0.3 | 14 | 6,903 |
| | 2027 | 46,080 | 1,365.0 | 1,664.0 | | 299.0 | 13,778 | 0.5 | 6,889 | 72.3 | 72.6 | | 0.3 | 14 | 6,903 |
| | 2028 | 46,080 | 1,365.0 | 1,664.0 | | 299.0 | 13,778 | 0.5 | 6,889 | 72.3 | 72.6 | | 0.3 | 14 | 6,903 |
| | 2029 | 46,080 | 1,365.0 | 1,664.0 | | 299.0 | 13,778 | 0.5 | 6,889 | 72.3 | 72.6 | | 0.3 | 14 | 6,903 |
| | 2030 | 46,080 | 1,365.0 | 1,664.0 | | 299.0 | 13,778 | 0.5 | 6,889 | 72.3 | 72.6 | | 0.3 | 14 | 6,903 |
| | 2031 | 46,080 | 1,365.0 | 1,664.0 | | 299.0 | 13,778 | 0.5 | 6,889 | 72.3 | 72.6 | | 0.3 | 14 | 6,903 |
| | 2032 | 46,080 | 1,365.0 | 1,664.0 | | 299.0 | 13,778 | 0.5 | 6,889 | 72.3 | 72.6 | | 0.3 | 14 | 6,903 |

Note (1): "With" and "Without in the heading of the table mean "with-the project" case and "without-the project" case, respective

Note (2): Laden containers handling base, origins/destinations are Asian countrie

Note (3): Benefits to contribute to El Salvador is considered to be 50% of the total generated in savings of ship transport cos

Note (4): Combined Conversion Factor of 0.790 is used for estimateing economic costs for land transpor

**Table H.1.9 Economic Benefits Generated in Container Transport (local containers currently via Quetzal Port**

| Remarks in port saturation | Year | Volume | | | Ship transport cost (sea navigation + berth staying) | | | | | | | Land Trasport Cost | | | | | Payment to Foreign Port | | | Total benefit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (Laden) TEUs | (Laden) boxes | (Empty) boxes | With (La Union) | Without (Acajutla) | Without (Quetzal) | Difference (benefit) | Total benefit | Contribution | Total benefit | With (La Union) | Without (Acajutla) | Without (Quetzal) | Difference (benefit) | Total benefit | Without (Quetzal) | Without (Quetzal) | Total benefit | |
| | | TEUs | boxes | boxes | Unit price $/TEU | Unit price $/TEU | Unit price $/TEU | Unit price $/TEU | '000 US$ | % | '000 US$ | Unit price $/TEU | Unit price $/TEU | Unit price $/TEU | Unit price $/TEU | '000 US$ | tariff laden $/box | tariff Empty$/box | '000 US$ | '000 US$ |
| | | A | A' | | B | C | D | E = D-B | F = A x E | F1 | F2 | G | H | I | J = I-G | K = A x I | L | | M = A' x L | L = F2+ K+M |
| | 2005 | 25,627 | 14,977 | 9,503 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 2,537 | 0.5 | 1,269 | 72.3 | 72.6 | 125.8 | 53.5 | 1,371 | 160.0 | 94.0 | 3,290 | 5,929 |
| | 2006 | 28,115 | 16,024 | 10,356 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 2,784 | 0.5 | 1,392 | 72.3 | 72.6 | 125.8 | 53.5 | 1,504 | 160.0 | 94.0 | 3,537 | 6,434 |
| | 2007 | 30,611 | 17,020 | 11,168 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 3,030 | 0.5 | 1,515 | 72.3 | 72.6 | 125.8 | 53.5 | 1,638 | 160.0 | 94.0 | 3,773 | 6,926 |
| | 2008 | 33,103 | 17,969 | 11,941 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 3,277 | 0.5 | 1,639 | 72.3 | 72.6 | 125.8 | 53.5 | 1,771 | 160.0 | 94.0 | 3,997 | 7,407 |
| | 2009 | 35,596 | 18,874 | 12,678 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 3,524 | 0.5 | 1,762 | 72.3 | 72.6 | 125.8 | 53.5 | 1,904 | 160.0 | 94.0 | 4,212 | 7,878 |
| | 2010 | 38,089 | 19,739 | 13,381 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 3,771 | 0.5 | 1,885 | 72.3 | 72.6 | 125.8 | 53.5 | 2,038 | 160.0 | 94.0 | 4,416 | 8,339 |
| | 2011 | 41,942 | 21,736 | 14,908 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 4,152 | 0.5 | 2,076 | 72.3 | 72.6 | 125.8 | 53.5 | 2,244 | 160.0 | 94.0 | 4,879 | 9,199 |
| | 2012 | 45,793 | 23,731 | 16,437 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 4,533 | 0.5 | 2,267 | 72.3 | 72.6 | 125.8 | 53.5 | 2,450 | 160.0 | 94.0 | 5,342 | 10,056 |
| | 2013 | 49,642 | 25,726 | 17,966 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 4,915 | 0.5 | 2,457 | 72.3 | 72.6 | 125.8 | 53.5 | 2,656 | 160.0 | 94.0 | 5,805 | 10,918 |
| | 2014 | 53,485 | 27,720 | 19,496 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 5,295 | 0.5 | 2,648 | 72.3 | 72.6 | 125.8 | 53.5 | 2,862 | 160.0 | 94.0 | 6,268 | 11,777 |
| | 2015 | 57,336 | 29,713 | 21,027 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 5,676 | 0.5 | 2,838 | 72.3 | 72.6 | 125.8 | 53.5 | 3,067 | 160.0 | 94.0 | 6,731 | 12,636 |
| | 2016 | 62,417 | 32,346 | 22,890 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 6,179 | 0.5 | 3,090 | 72.3 | 72.6 | 125.8 | 53.5 | 3,339 | 160.0 | 94.0 | 7,327 | 13,756 |
| | 2017 | 67,948 | 35,213 | 24,919 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 6,727 | 0.5 | 3,363 | 72.3 | 72.6 | 125.8 | 53.5 | 3,635 | 160.0 | 94.0 | 7,976 | 14,975 |
| With case: La Union saturatio | 2018 | 73,965 | 38,333 | 27,127 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 7,323 | 0.5 | 3,661 | 72.3 | 72.6 | 125.8 | 53.5 | 3,957 | 160.0 | 94.0 | 8,683 | 16,302 |
| | 2019 | 73,965 | 38,333 | 27,127 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 7,323 | 0.5 | 3,661 | 72.3 | 72.6 | 125.8 | 53.5 | 3,957 | 160.0 | 94.0 | 8,683 | 16,302 |
| | 2020 | 73,965 | 38,333 | 27,127 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 7,323 | 0.5 | 3,661 | 72.3 | 72.6 | 125.8 | 53.5 | 3,957 | 160.0 | 94.0 | 8,683 | 16,302 |
| | 2021 | 73,965 | 38,333 | 27,127 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 7,323 | 0.5 | 3,661 | 72.3 | 72.6 | 125.8 | 53.5 | 3,957 | 160.0 | 94.0 | 8,683 | 16,302 |
| | 2022 | 73,965 | 38,333 | 27,127 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 7,323 | 0.5 | 3,661 | 72.3 | 72.6 | 125.8 | 53.5 | 3,957 | 160.0 | 94.0 | 8,683 | 16,302 |
| | 2023 | 73,965 | 38,333 | 27,127 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 7,323 | 0.5 | 3,661 | 72.3 | 72.6 | 125.8 | 53.5 | 3,957 | 160.0 | 94.0 | 8,683 | 16,302 |
| | 2024 | 73,965 | 38,333 | 27,127 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 7,323 | 0.5 | 3,661 | 72.3 | 72.6 | 125.8 | 53.5 | 3,957 | 160.0 | 94.0 | 8,683 | 16,302 |
| | 2025 | 73,965 | 38,333 | 27,127 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 7,323 | 0.5 | 3,661 | 72.3 | 72.6 | 125.8 | 53.5 | 3,957 | 160.0 | 94.0 | 8,683 | 16,302 |
| | 2026 | 73,965 | 38,333 | 27,127 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 7,323 | 0.5 | 3,661 | 72.3 | 72.6 | 125.8 | 53.5 | 3,957 | 160.0 | 94.0 | 8,683 | 16,302 |
| | 2027 | 73,965 | 38,333 | 27,127 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 7,323 | 0.5 | 3,661 | 72.3 | 72.6 | 125.8 | 53.5 | 3,957 | 160.0 | 94.0 | 8,683 | 16,302 |
| | 2028 | 73,965 | 38,333 | 27,127 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 7,323 | 0.5 | 3,661 | 72.3 | 72.6 | 125.8 | 53.5 | 3,957 | 160.0 | 94.0 | 8,683 | 16,302 |
| | 2029 | 73,965 | 38,333 | 27,127 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 7,323 | 0.5 | 3,661 | 72.3 | 72.6 | 125.8 | 53.5 | 3,957 | 160.0 | 94.0 | 8,683 | 16,302 |
| | 2030 | 73,965 | 38,333 | 27,127 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 7,323 | 0.5 | 3,661 | 72.3 | 72.6 | 125.8 | 53.5 | 3,957 | 160.0 | 94.0 | 8,683 | 16,302 |
| | 2031 | 73,965 | 38,333 | 27,127 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 7,323 | 0.5 | 3,661 | 72.3 | 72.6 | 125.8 | 53.5 | 3,957 | 160.0 | 94.0 | 8,683 | 16,302 |
| | 2032 | 73,965 | 38,333 | 27,127 | 942.0 | 1,078.0 | 1,041.0 | 99.0 | 7,323 | 0.5 | 3,661 | 72.3 | 72.6 | 125.8 | 53.5 | 3,957 | 160.0 | 94.0 | 8,683 | 16,302 |

Note (1): "With" and "Without in the heading of the table mean "with-the project" case and "without-the project" case, respectively

Note (2): Laden containers handling base, origins/destinations are assumed mainly USA(74%) and Asian(26%)

Note (3): Benefits to contribute to El Salvador is considered to be 50% of the total generated in savings of ship transport cost

Note (4): Combined Conversion Factor of 0.790 is used for estimateing economic costs for land transport

Note (5): In without case, half of containers currently via Quetzal Port is assumed to return to Acajutla due to the progress of privatizatio

Note (6): In land transport costs are combined costs assuming from/to Sanlavador (70%) and San Migel (30%).

**Table H.1.10 Economic Benefits Generated from Handling Foreign Containers**

| Remarks in port saturation | Year | Volume | | | | Earnings from foreign countries | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Laden | Empty | Laden | | Laden | Empty | Laden | Total bebefit |
| | | boxes | boxes | MT/box | MT | tariff $/box | tariff $/box | tariff$/MT | '000 US$ |
| | | A | B | B' | C | D | E | F | E = AxD+BxE+CxF |
| | 2005 | 19,455 | 12,345 | 18.8 | 366,313 | 85.25 | 91.86 | 5.56 | 4,829 |
| | 2006 | 20,744 | 13,407 | 19.3 | 399,935 | 85.25 | 91.86 | 5.56 | 5,224 |
| | 2007 | 21,971 | 14,416 | 19.7 | 433,583 | 85.25 | 91.86 | 5.56 | 5,608 |
| | 2008 | 23,141 | 15,377 | 20.2 | 467,250 | 85.25 | 91.86 | 5.56 | 5,983 |
| | 2009 | 24,257 | 16,293 | 20.7 | 500,931 | 85.25 | 91.86 | 5.56 | 6,350 |
| | 2010 | 25,323 | 17,167 | 21.1 | 534,624 | 85.25 | 91.86 | 5.56 | 6,708 |
| | 2011 | 27,398 | 18,792 | 21.1 | 577,887 | 85.25 | 91.86 | 5.56 | 7,275 |
| | 2012 | 29,475 | 20,415 | 21.1 | 621,208 | 85.25 | 91.86 | 5.56 | 7,842 |
| | 2013 | 31,554 | 22,036 | 21.1 | 664,574 | 85.25 | 91.86 | 5.56 | 8,409 |
| | 2014 | 33,634 | 23,656 | 21.0 | 707,975 | 85.25 | 91.86 | 5.56 | 8,977 |
| | 2015 | 35,716 | 25,275 | 21.0 | 751,405 | 85.25 | 91.86 | 5.56 | 9,544 |
| | 2016 | 39,920 | 28,250 | 21.0 | 839,850 | 85.25 | 91.86 | 5.56 | 10,668 |
| | 2017 | 43,727 | 30,944 | 21.0 | 919,957 | 85.25 | 91.86 | 5.56 | 11,685 |
| With case: La Union saturati | 2018 | 47,102 | 33,333 | 21.0 | 990,968 | 85.25 | 91.86 | 5.56 | 12,587 |
| | 2019 | 47,102 | 33,333 | 21.0 | 990,968 | 85.25 | 91.86 | 5.56 | 12,587 |
| | 2020 | 47,102 | 33,333 | 21.0 | 990,968 | 85.25 | 91.86 | 5.56 | 12,587 |
| | 2021 | 47,102 | 33,333 | 21.0 | 990,968 | 85.25 | 91.86 | 5.56 | 12,587 |
| | 2022 | 47,102 | 33,333 | 21.0 | 990,968 | 85.25 | 91.86 | 5.56 | 12,587 |
| | 2023 | 47,102 | 33,333 | 21.0 | 990,968 | 85.25 | 91.86 | 5.56 | 12,587 |
| | 2024 | 47,102 | 33,333 | 21.0 | 990,968 | 85.25 | 91.86 | 5.56 | 12,587 |
| | 2025 | 47,102 | 33,333 | 21.0 | 990,968 | 85.25 | 91.86 | 5.56 | 12,587 |
| | 2026 | 47,102 | 33,333 | 21.0 | 990,968 | 85.25 | 91.86 | 5.56 | 12,587 |
| | 2027 | 47,102 | 33,333 | 21.0 | 990,968 | 85.25 | 91.86 | 5.56 | 12,587 |
| | 2028 | 47,102 | 33,333 | 21.0 | 990,968 | 85.25 | 91.86 | 5.56 | 12,587 |
| | 2029 | 47,102 | 33,333 | 21.0 | 990,968 | 85.25 | 91.86 | 5.56 | 12,587 |
| | 2030 | 47,102 | 33,333 | 21.0 | 990,968 | 85.25 | 91.86 | 5.56 | 12,587 |
| | 2031 | 47,102 | 33,333 | 21.0 | 990,968 | 85.25 | 91.86 | 5.56 | 12,587 |
| | 2032 | 47,102 | 33,333 | 21.0 | 990,968 | 85.25 | 91.86 | 5.56 | 12,587 |

## Table H1.11 Forecast Cargo Volume in Salvadorian Overses Trade and Transit Cargo via Salvadorian Ports (With-the Project Case)

| Trade | Cargo Category & Package Style | | Commodity | Actual Record | Projection in Salvadorian Ports | | | Projection in Cutuco Port Cargo Volume (MT or TEUs) | | | Projection in Acajutla Port Cargo Volume (MT or TEUs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2000 | 2005 | 2010 | 2015 | 2005 | 2010 | 2015 | 2005 | 2010 | 2015 |
| with | General Cargo | Break-bulk | Miscellaneous | 14,452 | 15,000 | 15,000 | 18,000 | | | | 15,000 | 15,000 | 18,000 |
| | | | *Chemical products* | 15,004 | 32,000 | 52,000 | 78,000 | | | | 32,000 | 52,000 | 78,000 |
| | | | Iron and Steel, and their products | 218,558 | 372,000 | 555,000 | 789,000 | 37,200 | 55,500 | 78,900 | 334,800 | 499,500 | 710,100 |
| | | | Fertilizer in bag | 22,579 | 39,000 | 39,000 | 39,000 | | | | 39,000 | 39,000 | 39,000 |
| | | | Vehicles | 10,357 | 15,000 | 22,000 | 33,000 | 4,500 | 6,600 | 9,900 | 10,500 | 15,400 | 23,100 |
| | | | Nonferrous metal products | 6,948 | 17,000 | 29,000 | 45,000 | | | | 17,000 | 29,000 | 45,000 |
| | | | Cement in bag | 3,000 | 60,000 | 70,000 | 80,000 | 60,000 | 70,000 | 80,000 | 0 | 0 | 0 |
| | | | Total (MT) | 290,898 | 550,000 | 782,000 | 1,082,000 | 101,700 | 132,100 | 168,800 | 448,300 | 649,900 | 913,200 |
| | | Containers including empty (TEUs) | | 29,876 | 40,500 | 62,500 | 96,000 | 40,100 | 62,100 | 95,600 | 400 | 400 | 400 |
| | Dry Bulk | | Cereals including maize flour | 751,363 | 965,000 | 1,190,000 | 1,432,000 | 289,500 | 357,000 | 429,600 | 675,500 | 833,000 | 1,002,400 |
| | | | Fertilizer | 272,666 | 351,000 | 351,000 | 351,000 | 105,300 | 105,300 | 105,300 | 245,700 | 245,700 | 245,700 |
| | | | Soybean flour | 158,623 | 194,000 | 209,000 | 225,000 | 58,200 | 62,700 | 67,500 | 135,800 | 146,300 | 157,500 |
| | | | Others | 8,788 | 9,000 | 9,000 | 9,000 | | | | 9,000 | 9,000 | 9,000 |
| | | | Total (MT) | 1,191,440 | 1,519,000 | 1,759,000 | 2,017,000 | 453,000 | 525,000 | 602,400 | 1,066,000 | 1,234,000 | 1,414,600 |
| | Liquid Bulk | | Diesel oil | 202,986 | 276,000 | 375,000 | 494,000 | | | | 276,000 | 375,000 | 494,000 |
| | | | Gasoline | 128,268 | 166,000 | 225,000 | 276,000 | | | | 166,000 | 225,000 | 276,000 |
| | | | *Animal and vegetable fats* | 65,198 | 77,000 | 90,000 | 107,000 | | | | 77,000 | 90,000 | 107,000 |
| | | | Soybean oil | 19,804 | 19,000 | 19,000 | 19,000 | | | | 19,000 | 19,000 | 19,000 |
| | | | Alcohol | 17,753 | 18,000 | 18,000 | 18,000 | | | | 18,000 | 18,000 | 18,000 |
| | | | Butane gas | 15,086 | 15,000 | 15,000 | 15,000 | | | | 15,000 | 15,000 | 15,000 |
| | | | Caustic soda | 15,015 | 28,000 | 43,000 | 63,000 | | | | 28,000 | 43,000 | 63,000 |
| | | | Alkane (methane hydrocarbonite) | 5,364 | 5,000 | 5,000 | 5,000 | | | | 5,000 | 5,000 | 5,000 |
| | | | Others | 30,965 | 30,000 | 30,000 | 30,000 | | | | 30,000 | 30,000 | 30,000 |
| | | | Total (MT) | 500,439 | 634,000 | 820,000 | 1,027,000 | | | | 634,000 | 820,000 | 1,027,000 |
| | Total excluding containers (MT | | | 1,982,777 | 2,703,000 | 3,361,000 | 4,126,000 | 554,700 | 657,100 | 771,200 | 2,148,300 | 2,703,900 | 3,354,800 |
| Export | General Cargo | Break-bulk | Miscellaneous | 2,782 | 4,000 | 2,000 | 2,000 | | | | 4,000 | 2,000 | 2,000 |
| | | | Total (MT) | 2,782 | 4,000 | 2,000 | 2,000 | | | | 4,000 | 2,000 | 2,000 |
| | | Containers including empty (TEUs) | | 7,247 | 40,500 | 62,500 | 96,000 | 40,500 | 62,500 | 96,000 | 0 | 0 | 0 |
| | Dry Bulk | | Sugar | 256,367 | 250,000 | 250,000 | 250,000 | 60,000 | 60,000 | 60,000 | 190,000 | 190,000 | 190,000 |
| | | | Total | 256,367 | 250,000 | 250,000 | 250,000 | 60,000 | 60,000 | 60,000 | 190,000 | 190,000 | 190,000 |
| | *Liquid Bulk* | | Molasses | 149,512 | 160,000 | 160,000 | 160,000 | 10,000 | 10,000 | 10,000 | 150,000 | 150,000 | 150,000 |
| | | | *Ethyl alcohol* | 19,644 | 19,000 | 19,000 | 19,000 | | | | 19,000 | 19,000 | 19,000 |
| | | | Total (MT) | 169,156 | 179,000 | 179,000 | 179,000 | 10,000 | 10,000 | 10,000 | 169,000 | 169,000 | 169,000 |
| | Total excluding containers (MT | | | 428,305 | 433,000 | 431,000 | 431,000 | 70,000 | 70,000 | 70,000 | 363,000 | 361,000 | 361,000 |
| Overseas Trade | Grand Total excluding containers (MT | | | 2,411,082 | 3,136,000 | 3,792,000 | 4,557,000 | 624,700 | 727,100 | 841,200 | 2,511,300 | 3,064,900 | 3,715,800 |
| | Containers (TEUs) | | | 37,123 | 81,000 | 125,000 | 192,000 | 80,600 | 124,600 | 191,600 | 400 | 400 | 400 |
| Transit | Containers (TEUs) | | | 0 | 40,000 | 60,000 | 84,000 | 40,000 | 60,000 | 84,000 | 0 | 0 | 0 |
| Container Grand Total (TEUs) | | | | 37,123 | 121,000 | 185,000 | 276,000 | 120,600 | 184,600 | 275,600 | 400 | 400 | 400 |

Source: Projected by the study team using the original data from CEPA
Excluding LPG and butane gas handled at Punta Gorda

## Table H1.12 Forecast Cargo Volume in Salvadorian Overses Trade and Transit Cargo via Salvadorian Ports (Without-the Project Case)

| Trade | Cargo Category & Package Style | | Commodity | Actual Record | Projection in Salvadorian Ports | | | Projection in Cutuco Port Cargo Volume (MT or TEUs) | | | Projection in Acajutla Port Cargo Volume (MT or TEUs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2000 | 2005 | 2010 | 2015 | 2005 | 2010 | 2015 | 2005 | 2010 | 2015 |
| Import | General Cargo | Break-bulk | Miscellaneous | 14,452 | 15,000 | 15,000 | 18,000 | | | | 15,000 | 15,000 | 18,000 |
| | | | Chemical products | 15,004 | 32,000 | 52,000 | 78,000 | | | | 32,000 | 52,000 | 78,000 |
| | | | Iron and Steel, and their products | 218,558 | 372,000 | 555,000 | 789,000 | | | | 372,000 | 555,000 | 789,000 |
| | | | Fertilizer in bag | 22,579 | 39,000 | 39,000 | 39,000 | | | | 39,000 | 39,000 | 39,000 |
| | | | Vehicles | 10,357 | 15,000 | 22,000 | 33,000 | | | | 15,000 | 22,000 | 33,000 |
| | | | Nonferrous metal products | 6,948 | 17,000 | 29,000 | 45,000 | | | | 17,000 | 29,000 | 45,000 |
| | | | Cement in bag | 3,000 | 60,000 | 70,000 | 80,000 | | | | | | |
| | | | Total (MT) | 290,898 | 550,000 | 782,000 | 1,082,000 | | | | 550,000 | 782,000 | 1,082,000 |
| | | Containers including empty (TEUs) | | 29,876 | 40,500 | 62,500 | 96,000 | | | | 40,500 | 62,500 | 96,000 |
| | Dry Bulk | | Cereals including maize flour | 751,363 | 965,000 | 1,190,000 | 1,432,000 | | | | 965,000 | 1,190,000 | 1,432,000 |
| | | | Fertilizer | 272,666 | 351,000 | 351,000 | 351,000 | | | | 351,000 | 351,000 | 351,000 |
| | | | Soybean flour | 158,623 | 194,000 | 209,000 | 225,000 | | | | 194,000 | 209,000 | 225,000 |
| | | | Others | 8,788 | 9,000 | 9,000 | 9,000 | | | | 9,000 | 9,000 | 9,000 |
| | | | Total (MT) | 1,191,440 | 1,519,000 | 1,759,000 | 2,017,000 | | | | 1,519,000 | 1,759,000 | 2,017,000 |
| | Liquid Bulk | | Diesel oil | 202,986 | 276,000 | 375,000 | 494,000 | | | | 276,000 | 375,000 | 494,000 |
| | | | Gasoline | 128,268 | 166,000 | 225,000 | 276,000 | | | | 166,000 | 225,000 | 276,000 |
| | | | Animal and vegetable fats | 65,198 | 77,000 | 90,000 | 107,000 | | | | 77,000 | 90,000 | 107,000 |
| | | | Soybean oil | 19,804 | 19,000 | 19,000 | 19,000 | | | | 19,000 | 19,000 | 19,000 |
| | | | Alcohol | 17,753 | 18,000 | 18,000 | 18,000 | | | | 18,000 | 18,000 | 18,000 |
| | | | Butane gas | 15,086 | 15,000 | 15,000 | 15,000 | | | | 15,000 | 15,000 | 15,000 |
| | | | Caustic soda | 15,015 | 28,000 | 43,000 | 63,000 | | | | 28,000 | 43,000 | 63,000 |
| | | | Alkane (methane hydrocarbonite) | 5,364 | 5,000 | 5,000 | 5,000 | | | | 5,000 | 5,000 | 5,000 |
| | | | Others | 30,965 | 30,000 | 30,000 | 30,000 | | | | 30,000 | 30,000 | 30,000 |
| | | | Total (MT) | 500,439 | 634,000 | 820,000 | 1,027,000 | | | | 634,000 | 820,000 | 1,027,000 |
| | Total excluding containers (MT | | | 1,982,777 | 2,703,000 | 3,361,000 | 4,126,000 | | | | 2,703,000 | 3,361,000 | 4,126,000 |
| Export | General Cargo | Break-bulk | Miscellaneous | 2,782 | 4,000 | 2,000 | 2,000 | | | | 4,000 | 2,000 | 2,000 |
| | | | Total (MT) | 2,782 | 4,000 | 2,000 | 2,000 | | | | 4,000 | 2,000 | 2,000 |
| | | Containers including empty (TEUs) | | 7,247 | 40,500 | 62,500 | 96,000 | | | | 40,500 | 62,500 | 96,000 |
| | Dry Bulk | | Sugar | 256,367 | 250,000 | 250,000 | 250,000 | | | | 250,000 | 250,000 | 250,000 |
| | | | Total | 256,367 | 250,000 | 250,000 | 250,000 | | | | 250,000 | 250,000 | 250,000 |
| | Liquid Bulk | | Molasses | 149,512 | 160,000 | 160,000 | 160,000 | | | | 160,000 | 160,000 | 160,000 |
| | | | Ethyl alcohol | 19,644 | 19,000 | 19,000 | 19,000 | | | | 19,000 | 19,000 | 19,000 |
| | | | Total (MT) | 169,156 | 179,000 | 179,000 | 179,000 | | | | 179,000 | 179,000 | 179,000 |
| | Total excluding containers (MT | | | 428,305 | 433,000 | 431,000 | 431,000 | | | | 433,000 | 431,000 | 431,000 |
| Overseas Trade | Grand Total excluding containers (MT | | | 2,411,082 | 3,136,000 | 3,792,000 | 4,557,000 | | | | 3,136,000 | 3,792,000 | 4,557,000 |
| | Containers (TEUs) | | | 15,000 | 24,000 | 39,000 | 60,000 | | | | 24,000 | 39,000 | 60,000 |
| Transit | Containers (TEUs) | | | 0 | 0 | 0 | 0 | | | | 0 | 0 | 0 |
| Container Grand Total (TEUs) | | | | 15,000 | 24,000 | 39,000 | 60,000 | | | | 24,000 | 39,000 | 60,000 |

Source: Projected by the study team using the original data from CEPA
Excluding LPG and butane gas handled at Punta Gorda

# APPENDIX I ENVIRONMENTAL SURVEYS

# APPENDIX I ENVIRONMENTAL SURVEYS

## I.1 Scope of Environmental Surveys

The following additional environmental surveys were conducted to collect additional information required for the study and predictions of sediment dispersion behavior.

1) Ecological survey in the reclamation area (benthos, marine biology)
2) Ecological survey in the borrow area (terrestrial plant an animal)
3) Offshore ecological survey in the dredging area (tidal current, water quality, seabed material, benthos)
4) Offshore ecological survey in the dumping area (water quality, seabed material, benthos)
5) Fishery activity survey
6) Present condition survey (water quality, seabed material, benthos)
7) Air quality observation
8) Water quality for future monitoring purpose (water quality)

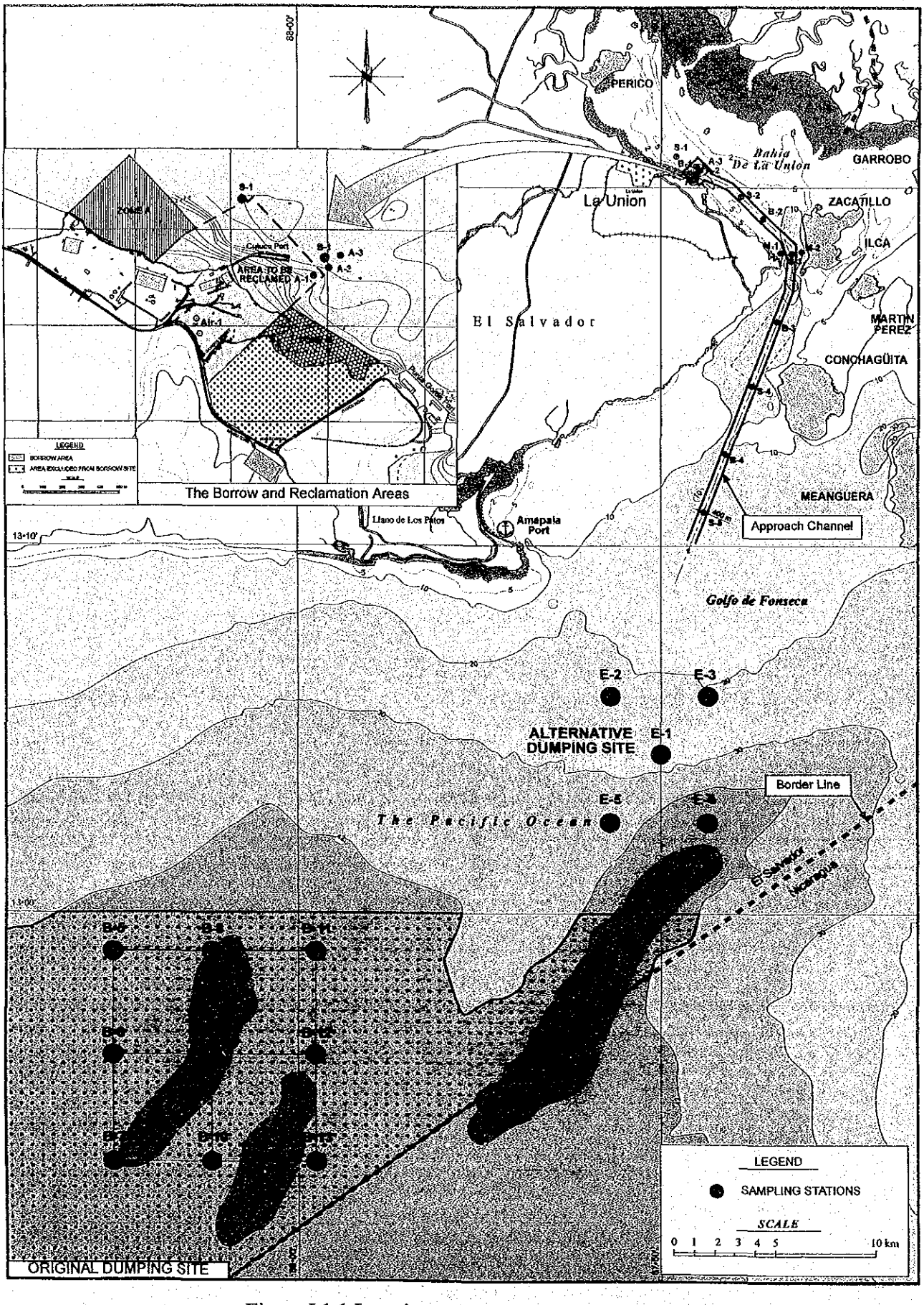



Figure I.1.1 Locations of Environmental Surveys

## I.2 Ecology Survey of Sunken Rocks

**Table I.2.1 Structure of Biotic in Marine Area, Rock and Sand (50 meters by sampling station) in North Area from "Cutuco" Dock, La Unión Bay, Fonseca Gulf de December 2001**

| STATION | BIOTIC COBERTURE (%) | ROCK (%) | SAND (%) | SPECIES (Quantity) | DIVERSITY (H) | EQUITATIVITY (J) |
|---|---|---|---|---|---|---|
| | | | | | | |
| 1 | 10.8 | 15.2 | 74 | 13 | 1.59 | 0.62 |
| 2 | 15.8 | 32 | 52.2 | 10 | 1.63 | 0.71 |
| 3 | 22.6 | 42.4 | 35 | 9 | 1.64 | 0.74 |
| 4 | 15.8 | 27.2 | 57 | 10 | 1.78 | 0.77 |
| 5 | 18.4 | 28 | 53.6 | 12 | 1.76 | 0.71 |
| 6 | 16.6 | 30 | 53.4 | 12 | 1.77 | 0.71 |
| | | | | | | |
| X +/- S | | 29.1 +/-8.8 | 54.2 +/- 12.4 | | | |
| | | | | | | |
| **TOTAL SPECIES FOUNDED** | | | | | | |

## Table I.2.2 Total Coberture by Biotic Species on each Sampling Station

| SPECIE | STATION | | | | | | Summary | Density (Ind/m2) | Percentage (%) |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | | | |
| | | | | | | | | | |
| Nerita sp "caracol negro" | 29 | 207 | 274 | 89 | 190 | 150 | 939 | 9.39 | 13.5 |
| Ostrea iridescens "ostra" | 24 | 48 | 143 | 130 | 107 | 95 | 547 | 5.47 | 7.8 |
| Bostrychyia moritziana "alga filamentosa" | | | 6 | 5 | 7 | 6 | 24 | 0.24 | 0.32 |
| Bostrychyia sp "alga costrosa" | 8 | | | 10 | | 9 | 27 | 0.27 | 0.4 |
| Cladophora "alga mechuda" | 11 | 1 | | | 3 | | 15 | 0.15 | 0.2 |
| Polimesoda solida "miona o almeja" | 5 | 21 | 51 | 30 | 35 | 39 | 181 | 1.81 | 2.6 |
| "esponja amarilla" | 10 | | | | 8 | | 18 | 0.18 | 0.3 |
| "esponja blanca" | 10 | | | | | 5 | 15 | 0.15 | 0.2 |
| Balanus sp. "cirriperidos o bromas" | 404 | 465 | 614 | 360 | 480 | 460 | 2783 | 27.83 | 40 |
| Chiton stokesii "quitón" | 1 | | | | 2 | | 3 | 0.03 | 0.04 |
| Cerithidea sp. "caracolillos" | 48 | 126 | 90 | 105 | 110 | 95 | 574 | 5.74 | 8.2 |
| "tubos de poliquetos" | 84 | 172 | 348 | 300 | 275 | 226 | 1405 | 14.05 | 20.1 |
| Mytella guyanensis "churria o mejillón" | 110 | 51 | 43 | 45 | 52 | 60 | 361 | 3.61 | 5.2 |
| Clibanarius panamensis "cangrejo ermitaño" | 10 | 11 | 5 | 25 | 15 | 13 | 79 | 0.79 | 1.1 |
| Nudy branchia "babosa marina" | | 1 | | | | 2 | 3 | 0.03 | 0.04 |
| | | | | | | | | | |
| SUMMARY | 754 | 1103 | 1574 | 1099 | 1284 | 1160 | 6974 | | 100 |
| PERCENTAGE | 10.8 | 15.8 | 22.6 | 15.8 | 18.4 | 16.6 | | | 100 |

## Table I.2.3 Importance Value Index (IVI) Considering Coberture of Biota, Rock and Sand on Six Sampling Stations

| SPECIES | ABSOLUTE FREQUENCY | RELATIVE FREQUENCY | ABSOLUTE DENSITY | RELATIVE DENSITY | ABSOLUTE COBERTURE | RELATIVE COBERTURE | I V I |
|---|---|---|---|---|---|---|---|
| Nerita sp "caracol negro" | 153 | 8.16 | 6.14 | 4.26 | 939 | 2.89 | 15.31 |
| Ostrea iridescens "ostra" (oister) | 108 | 5.76 | 5.06 | 3.51 | 547 | 1.68 | 10.95 |
| Bostrychyia moritziana "alga filamentosa" | 6 | 0.32 | 4 | 2.78 | 24 | 0.07 | 3.17 |
| Bostrychyia sp "alga costrosa" | 5 | 0.27 | 5.4 | 3.75 | 27 | 0.08 | 4.1 |
| Cladophora "alga mechuda" | 7 | 0.37 | 2.14 | 1.49 | 15 | 0.06 | 1.91 |
| Polimesoda solida "miona o almeja" | 79 | 4.21 | 2.29 | 1.59 | 181 | 0.56 | 6.36 |
| "esponja amarilla" | 3 | 0.16 | 6 | 4.17 | 18 | 0.05 | 4.38 |
| "esponja blanca" | 2 | 0.11 | 7.5 | 5.21 | 15 | 0.05 | 5.4 |
| ROCA | 323 | 17.23 | 28.12 | 19.53 | 9084 | 27.9 | 64.66 |
| ARENA | 330 | 17.6 | 49.83 | 34.6 | 16446 | 50.6 | 102.8 |
| Balanus sp. "cirriperidos o bromas" | 268 | 14.29 | 10.38 | 7.21 | 2783 | 8.56 | 30.06 |
| Chiton stokesii "quitón" | 2 | 0.11 | 1.5 | 1.04 | 3 | 0.01 | 1.16 |
| Cerithidea sp. "caracolillos" | 160 | 8.53 | 3.59 | 2.49 | 574 | 1.77 | 12.79 |
| "tubos de poliquetos" | 258 | 13.76 | 5.45 | 3.78 | 1405 | 4.33 | 21.86 |
| Mytella guyanensis "churria o mejillón" | 139 | 7.41 | 2.6 | 1.81 | 361 | 1.11 | 10.36 |
| Clibanarius panamensis "cangrejo ermitaño" (crab). | 30 | 1.6 | 2.5 | 1.74 | 75 | 0.27 | 3.57 |
| Nudy branchia "babosa marina" | 2 | 0.11 | 1.5 | 1.04 | 3 | 0.01 | 1.16 |
| | | | | | | | |
| SUMMARY | 1875 | 100 | 144 | 100 | 32500 | 100 | 300 |

**Table I.2.4 *Comparison of Biotic Community Structure* between South and North Side of Dock**

| STRUCTURAL CARACTERISTIC | NORTH SIDE | % | SOUTH SIDE |
|---|---|---|---|
| DOMINANT COVERTURE (%) | SAND: 54 | | SAND: 38 |
| | ROCK: 29 | | ROCK: 58 |
| | | | |
| SPECIES QUANTITY | 15 | | 16 |
| | | | |
| PRIORITY SPECIES DENSITY (ind/m2) | | | |
| | | | |
| a) Balanus sp "bromas" | 28 | | 33 |
| b) Tubos de poliquetos | 14 | | 5.5 |
| c) Cirithidea sp "caracolillos" | 5.7 | | 5.3 |
| d) Nerita sp. "caracol negro" | 9.39 | | 6. 1 |
| e) Ostrea iridescens "ostra" | 5.5 | | 20 |
| | | | |
| DIVERSITY (H´) | 1.59 TO 1.78 | | 0.6 TO 1.6 |
| EQUITATIVITY (J´) | 0.62 TO 0.77 | | 0.38 TO 0.99 |
| SIMILARITY INDEX IN BOTH AREAS (%) | | | |
| a) Coverture | | 84 | |
| b) Precense or absence of species | | 84 | |

## I.3 Inland Ecology Survey

**Table I.3.1 Trees and Shrubs Identified by Ecological Survey for Borrow Site**

| FAMILY | SCIENTIFIC NAME | LOCAL COMMON NAME | ENGLISH NAME |
|---|---|---|---|
| Leguminosae | *Enterolobium cyclocarpum* | Conacaste negro | Guanacaste tree |
| | *Pithecelobium oblongum** | Mangollano | N/A |
| | *Pithecelobium saman* | Zorra | Monkey pod |
| | *Mimosa farnesiana* | Espino blanco | Sweet Acacia or Koa |
| | *Caesaria racemosa* | Nacascol | N/A |
| | *Piptadenia constricta** | Pintadillo | N/A |
| | *Albizzia caribeae** | Conacaste blanco | Caribean pine |
| | *Gliricidia sepium* | Madrecacao | mother of cacao |
| | *Mimosa pigra* | Zarza | catclaw mimosa |
| | *Delonix regia* | Flor de fuego | flame tree |
| | *Acacia cornigera* | Iscanal | Bull-horn Acacia |
| | *Andira inermis* | Almendro de río | Cabbage Tree |
| | *Bauhinia ungulata* | Casco de venado | Orchid Tree |
| | *Lysiloma divaricatum** | Quebracho | N/A |
| | *Cassia grandis* | Carao | N/A |
| | *Lonchocarpus minimiflorus* | Cincho | N/A |
| | *Tamarindus indica* | Tamarindo | Tamarind Tree |
| | *Hymenaea coubaril* | Copinol | Red locus or Jatoba |
| | *Crotalaria vitulina* | Chipilín montés | N/A |
| Borraginaceae | *Cordia dentata* | Tiguilote | N/A |
| Combretaceae | *Combretum farinosus* | Chupamiel | Wild bindweed |
| | *Conocarpus erectus** | Botoncillo | Buttonnwood |
| | *Laguncularia racemosa** | Sincahuite – Mangle Blanco | White Mangrove |
| Burseraceae | *Bursera simaruba* | Palo jiote | Gumbo limbo |
| Sterculiaceae | *Sterculia apetala* | Caulote | French Peanut |
| Bignoniaceae | *Tabebuia rosea* | Maquilishuat | Pink Tecoma |
| | *Crescentia cujete** | Jícaro | Calabash Tree |
| | *Crescentia alata* | Morro | Calabash Tree |
| Polygonaceae | *Coccoloba floribunda** | Iril | N/A |
| | *Swietenia humilis** | Caobo | Pacific Coast Mahogany |
| | *Cedrela odorata** | Cedar | Spanish Cedar |
| | *Trichilia martiana** | Cola de pava | N/A |
| Simaroubaceae | *Simaruba glauca* | Arbol de Olivas | Olive Tree |
| Apocynaceae | *Stemmadenia molli* | Cojón | N/A |
| | *Stemmadenia donnell-smithii* | Cojón de puerco | Horse balls |
| | *Plumeria rubra* | Flor de mayo | Plumeria or Franginapi |

| FAMILY | SCIENTIFIC NAME | LOCAL COMMON NAME | ENGLISH NAME |
|---|---|---|---|
| | *Plumeria acutifolia* | Flor de ensarta | Temple Tree |
| Cochlospermaceae | *Cochlospermum vitifolium* | Tecomasuche | Single Flower Buttercup |
| Moraceae | *Cecropia peltata* | Guarumo | Trumpet Tree |
| | *Ficus glabrata** | Amate | Small leaved Fig |
| Rutaceae | *Murraya paniculata* | Myrtle or Mirto | Orange Jasmin |
| | *Citrus aurantifolia* | Limon | Lemon |
| | *Citrus medica* | Grapefruit | Grapefruit |
| | *Citrus lima* | Naranja lima | Lime |
| Anacardiaceae | *Spondias purpurea* | Jocote de verano | Red Plum |
| | *Mangifera indica* | Mango | Mango |
| Araliaceae | *Polyscia sp* | Encaje | Cortón |
| Casuarinaceae | *Casuarina equisetifolia* | Casuarina | Australian Pine |
| Malvaceae | *Hibiscus rosa-sinensis* | Clavelón | Hibiscus |
| Rubiaceae | *Gardenia jasminioides* | Jazmín del cabo | Gardenia |
| | *Randia armata* | Crucito | N/A |
| | *Calycophyllum candidissimum** | Salamo | Guatagire |
| Arecaceae | *Erythea salvadorensis** | Palma de sombrero | Palm Tree |
| Bombacaceae | *Ceiba pentandra** | Ceiba | Silk Cotton Tree or Kapok |
| Euphorbiaceae | *Jathropa curcas* | Tempate | Nettlespurge |
| | *Ricinus communis* | Higuerillo | Castrobean |
| | *Alchornea Latifolia** | Tambor | N/A |
| Annonaceae | *Annoma palustris* | Anona bayunca | Silly Sweet Sop |
| Verbenaceae | *Gmelina arborea* | Melina | Yemane |
| | *Tectona grandis* | Teca | Teak |
| | *Avicennia germinans** | Madresal | Black Mangrove |
| Malpighiaceae | *Mascagnia ovatiforme* | Nance verde | Golden Spoon |
| Capparidaceae | *Crataeva tapia** | Cachimbo | Garlic Pear |
| | *Capparis indica* | Curumo | Caper |
| Ulmaceae | *Karwinskia calderonii** | Huiliguishte | N/A |
| Cactaceae | *Opuntia salvadorensis* | Nopla | Prickly Pear |
| Solanaceae | *Solanum hayesii* | Friega platos | N/A |
| Asclepiadaceae | *Calotropis gigantean* | Huisquil de playa | Milk Weed or Swallot-Wost |
| Myrtaceae | *Psidium guajava* | Guayabo | Common Guava |
| Caricaceae | *Carica cauliflora** | Molocote | Nam-nam |
| Rhizophoraceae | *Rhizophora mangle** | Mangle Colorado | Red Mangrove |
| Piperaceae | *Piper tuberculatum* | Cordoncillo | Candle Bus |
| | *Piper aurantium* | Santa María | Root Beer Plant |

**Note: * It means nationally rare**

## Table I.3.2 Herbaceous Flora Identified by Ecological Survey for Borrow Site

| FAMILY | SCIENTIFIC NAME | LOCAL COMMON NAME | ENGLISH NAME |
|---|---|---|---|
| Rubiaceae | *Hamelia patens* | Sisipince | Firebush |
| Verbenaceae | *Lantana camara* | Cinco negritos | Hummingbird flower |
| Sapindaceae | *Paullinia pinnata* | Nixtamal | Fruiting vine |
| Malvaceae | *Sida acuta* | Escobilla | Spinyhead sida |
| Solanaceae | *Capsicum bacatum* | Chiltepe | Wild Pepper |
| Acanthaceae | *Blechum brownie* | Corredora | Green Shrimp Plant |
| | *Justicia carthaginensis* | Sacatinta | Lavender Justicia |
| Loasaceae | *Gronovia scandens* | Pan caliente | N/A |
| Cucurbitaceae | *Luffa acutangula* | Paste | Vegetable Sponge |
| | *Cayaponia racemosa* | Sandía de culebra | N/A |
| | *Elaterium ciliatum* | Tunquito | Elaterium |
| Oxalidaceae | *Oxalis nei* | Agrillo | N/A |
| Convolvulaceae | *Ipomoea spp* | Campanilla | Morning Glory |
| Sterculiaceae | *Waltheria americana* | Escobilla de buey | Sleepy Morning |
| Tiliaceae | *Triunfetta lappula* | Mozote de caballo | Grandcousin |
| Graminaceae | *Cenchrus brownii* | Mozote | Burgrass |
| | *Cenchrus echinatus* | Mozote de playa | Burgrass |
| | *Pennisetum setosum* | Gusano | Fountain Grass |
| | *Paspalum fasciculatum* | Camalote | Banboo Grass |
| | *Ixophorus unisetus* | Zacate de agua | Honduras Grass |
| | *Hypharrennia ruffa* | Zacate illusion | N/A |
| | *Paspalum notatum* | Grama negra | Bahiagrass |
| | *Nassella pubiflora* | Plumilla | N/A |
| | *Cynodon dactylon* | Barrenillo | Bermuda Grass |
| Cyperanceae | *Cyperus spp* | Coyolillo | Nut sedge or Nutgrass |
| Phytolaceae | *Petiveria alliacea* | Epacina | Anamu |
| Compositae | *Baltimora recta* | Flor amarilla | N/A |
| | *Melanthera nivea* | Botoncillo | White Melanthera |
| | *Elephantopus spicatus* | Oreja de chucho | N/A |
| Passifloraceae | *Passiflora coriaceae* | Ala de muerciélago | Bat Leaf Pasión Flower |
| Asclepiadaceae | *Asclepias longicornis* | Matacoyote | Milkweed |
| Amaranthaceae | *Gomphrena globosa* | Borla | Globe Amaranth |
| Lamiaceae | *Hyptis capitata* | Chichinguaste | Buttonweed |
| Leguminosae | *Senna occidentalis* | Frijolillo | Coffe Senna or Coffeweed |
| Capparidaceae | *Cleome spinosa* | Alhelí | Spring Spider-Flower |
| Apocynaceae | *Rauwolfia tetraphylla* | Amatillo | Rauwolfia |

**Table I.3.3 Reptiles and Aquatic Fauna Identified by Ecological Survey for Borrow Site**

| SCIENTIFIC LATIN NAME | LOCAL COMMON NAME | ENGLISH COMMON NAME | MAG(*) 1998 |
|---|---|---|---|
| *Kinosternum scorpioides* | Tortuga candado | Scorpion mud turtle | T |
| *Rhinoclemys scorpioides* | Tortuga coralio | Central America turtle | |
| *Iguana iguana* | Iguana verde | Green iguana | DE |
| *Ctenosaura similes* | Garrobo | Spiny-tailed iguana | |
| *Norops sp* | Bebeleche | Anole | |
| *Ameiva undulata* | Lagartija | Whiptailed lizard | |
| *Basiliscus vittatus* | Tenguereche | Common grown basilisk | |
| *Boa Constrictor* | Masacuata | Boa Constrictor | T |
| *Oxybelis aeneus* | Bejuquilla cafe | Mexican vine snake | T |
| *Lampropeltis triangulum* | False coral | Milk snake | DE |
| *Micrurus nigrocinctus zunilensis* | Coral | Central American Coral Snake | T |
| *Masticophis mentovarius* | Zumbadora | Neotropical whipsnake | |
| *Crotalus durissus* | Cascabel | Rattlesnake | DE |

Note (*): (T = Threatened, DE = in Danger of Extinction) classified according to the guidelines established by MAG)

**Table I.3.4 Birds Identified by Ecological Survey for Borrow site**

| SCIENTIFIC LATIN NAME | LOCAL COMMON NAME | ENGLISH COMMON NAME | MAG(*) 1998 |
|---|---|---|---|
| *Pelecanus erythrorhynchus* | Pelicano blanco | American white pelican | T |
| *Pelecanus occidentalis* | Pelicano | Brown pelican | |
| *Fregata magnificens* | Fragatas | Magnificent frigatebird | |
| *Dendrocygna autumnalis* | Pichiche | Black bellied whistling-duck | |
| *Coragyps atratus* | Zope | Black vulture | |
| *Cathartes aura* | Zope de cabeza roja | Turkey vulture | |
| *Falco sparverius* | Lilisque | Sparrow kestrel | T |
| *Caracara plancus* | Querque | Southern caracara | T |
| *Ortalis leucogastra* | Chachalaca | White bellied chachalaca | T |
| *Colinus leucopogon* | Codorníz | Spot-bellied bobwhite | |
| *Charadrius semipalmatus* | Chorlito | Semipalmated plover | |
| *Actitis macularia* | Alzacoleta | Spotted sandpiper | |
| *Numenius phaeopus* | Chorlito | Whimbrel | |
| *Larus atricilla* | Gaviota | Laughing gull | |
| *Sterna maxim* | Gaviota | Maxim tern | |
| *Asian zenaida* | Paloma Blanca | White wing dove | |
| *Leptotila verreaxi* | Rodadora | White tipped dove | |
| *Columbine talpacoti* | Tortolita rojiza | Ruddy ground-dove | |
| *Columba livia* | Paloma de Castilla | Pigeon, rock dove | |
| *Columbine inca* | Tortolita | Incadove | |
| *Arantinga strenua* | Pericón | Pacific Parakeet | T |
| *Aratinga canicularis* | Chocoyo | Orange fronted parakeet | T |
| *Brotegeris yugularis* | Catalnica | Red neck parapkeet | |
| *Amazon auropaliata* | Lora de nuca amarilla | Yellow headed parrot | DE |
| *Crotophaga sulcirostris* | Pijuyo | Groove-billed ani | |
| *Piayua cayana* | Roasted bananas | Squirrel cuckoo | |
| *Glaucidium brasilianum* | Aurora | Ferruginous pygmy-owl | |
| *Amazilia twinkles* | Colibri | Hummingbird | |
| *Eumomota superciliosa* | Torogoz | Turquoie-browned motmot | |
| *Momota momota* | Talapo | Blue-crowned motmot | |
| *Melanerpes aurifrons* | Cheje | Golden-fronted woodpecker | |
| *Contopus cinreus* | Copetón | Tropical pewee | T |
| *Pitangus sulphuratus* | Cristo fue | Great kiskadee | |

| SCIENTIFIC LATIN NAME | LOCAL COMMON NAME | ENGLISH COMMON NAME | MAG(*) 1998 |
|---|---|---|---|
| *Progne chalybea* | Goloudrina gris | Grey breasted martin | |
| *Rustica hirundo* | Goloudrina | Barn swallow | |
| *Calocitta Formosa* | Magpie | White-throated magpie-jay | |
| *Campylorhynchus rufinucha* | Guacalchía | Rufous-naped wren | |
| *Turdus grayi* | Chonte | Clay colored robin | |
| *Vermivora peregrinae* | Chipe | Tennessee warbler | |
| *Dendroica petechia erythacorides* | Reinita del manglar | Yellow warbler | T |
| *Icterus g. galbula* | Chiltota | Baltimore oriole | |
| *Icterus gularis* | Chiltota | Altamira oriole | |
| *Quiscalus mexicanus* | Clarinero | Great-Tailed grackle | |

Note (*): (T = Threatened, DE = in Danger of Extinction) classified according to the guidelines established by MAG

**Table I.3.5 Mammals Identified by Ecological Survey for Borrow Site**

| SCIENTIFIC LATIN NAME | LOCAL COMMON NAME | ENGLISH COMMON NAME | MAG(*) 1998 |
|---|---|---|---|
| *Didelphys marsupialis* | Tacuazin | Opossums | |
| *Dasypus novemcinctus fanestratus* | Cuzuco | Nine banded armadillo | T |
| *Mephitis macroura* | Zorrillo | Hooded Skunk | |
| *Canis Latrans dickeyi* | Coyote | Coyote | T |
| *Agouti paca* | Tepezcuintle | Paca Agouti | DE |
| *Sylvilagus floridanus* | Conejo salvaje | Eastern cottontail rabbit | |
| *Procyon lotor* | Mapache | Raccoon | |
| *Herpailurus yagoaroundi* | Gato zonto | Otter cat | DE |
| *Sciurus variegatoides* | Ardillas | Squirrel | |
| *Nyctamys sp* | Ratón | Mouse | |
| *Rattus rattus* | Rata | Wild rat | |

Note (*): (T = Threatened, DE = in Danger of Extinction) classified according to the guidelines established by MAG

## I.4 Air Quality Survey

**Table I.4.1 24 Hour Monitoring Results**

| CONCENTRATION 24 HOURS (mg/m3) | | WORLD BANK GUIDE | % | USEPA GUIDE | % | EL SALVADOR NORMATIVE | % |
|---|---|---|---|---|---|---|---|
| **RAINY SEASON** | | | | | | | |
| PM10 (dust) | 4.6 | 110 | 4 | 150 | 3 | 150 | 3 |
| SO2 | < 13 | 125 | 10 | 165 | 8 | 365 | 4 |
| NO2 | < 9 | 150 | 6 | ND | | 150 | 6 |
| **DRY SEASON** | | | | | | | |
| PM10 (dust) | 21.1 | 110 | 19 | 150 | 14 | 150 | 14 |
| SO2 | < 13 | 125 | 10 | 165 | 8 | 365 | 4 |
| NO2 | < 9 | 150 | 6 | ND | | 150 | 6 |

## I.5 Water Quality Survey

### Table I.5.1 Quality of Surface Water along Proposed Approach Channel in September and December 2001
### (Temperature, ph and Salinity)

| | Temperature °C (Sep) | Temperature °C (Dec) | Ph (Sep) | pH (Dec) | Salinity 0/00 (Sep) | Salinity 0/00 (Dec) |
|---|---|---|---|---|---|---|
| A-1 | 33.0 | 28.0 | 8.0 | 8.5 | 30 | 29 |
| A-2 | 33.0 | 28.0 | 8.0 | 8.5 | 30 | 29 |
| A-3 | 33.0 | 28.0 | 2.9 | 8.4 | 30 | 29 |
| B-2 | 33.0 | 30.0 | 7.9 | 8.4 | 30 | 31 |
| B-3 | 32.0 | 30.0 | 7.9 | 8.1 | 31 | 31 |
| B-4 | 32.1 | 31.0 | 7.9 | 8.2 | 32 | 30 |
| M-1 | 33.0 | 30.0 | 7.9 | 8.3 | 30 | 30 |
| M-2 | 32.8 | 30.0 | 8.0 | 8.3 | 30 | 30 |
| S-1 | 33.0 | 28.0 | 7.9 | 8.5 | 30 | 29 |
| S-2 | 33.0 | 30.0 | 8.0 | 8.4 | 30 | 31 |
| S-3 | 32.0 | 30.0 | 7.8 | 8.2 | 30 | 30 |
| S-4 | 32.1 | 30.0 | 7.9 | 8.4 | 33 | 30 |
| S-5 | 31.1 | 30.0 | 8.0 | 8.2 | 33 | 32 |
| B-5 | 31.0 | | 8.1 | | 33 | |
| B-6 | 31.0 | 31.0 | 8.1 | 8.1 | 34 | 34 |
| B-7 | 31.0 | | 8.2 | | 33 | |
| B-8 | 31.0 | | 8.1 | | 33 | |
| B-9 | 33.0 | 33.0 | 8.2 | 8.2 | 35 | 35 |
| B-10 | 32.0 | | 8.2 | | 33 | |
| B-11 | 31.0 | | 8.2 | | 35 | |
| B-12 | 32.0 | 32.0 | 8.2 | 8.2 | 33 | 33 |
| B-13 | 32.0 | | 8.2 | | 33 | |
| E-1 | | 31.0 | | 7.8 | | 33 |
| E-2 | | 30.0 | | 7.9 | | 33 |
| E-3 | | 30.0 | | 7.9 | | 33 |
| E-4 | | 30.0 | | 7.9 | | 33 |
| E-5 | | 30.0 | | 7.9 | | 33 |

## Table I.5.2 Quality of Surface Water along Proposed Approach Channel in September and December 2001 (Transparency, turbidity and suspended solids).

| | Transparency m (Sep) | Transparency m (Dec) | Turbidity nt (Sep) | Turbidity nt (Dec) | Suspended Solids mg/ltr (sep) | Suspended Solids mg/ltr (sep) |
|---|---|---|---|---|---|---|
| A-1 | 0.71 | 0.96 | 2.2 | 1.4 | 186.5 | 195.5 |
| A-2 | 0.77 | 0.98 | 2.5 | 1.8 | 199.5 | 198 |
| A-3 | 0.82 | 0.95 | 2.0 | 1.6 | 170.5 | 202 |
| B-2 | 0.83 | 0.83 | 2.0 | 1.3 | 193 | 218 |
| B-3 | 0.97 | 0.8 | 1.8 | 1 | 195.5 | 206 |
| B-4 | 1.05 | 0.85 | 1.6 | 1.4 | 202.5 | 200.5 |
| M-1 | 0.80 | 0.92 | 2.1 | 2.3 | 193 | 213.5 |
| M-2 | 0.93 | 0.82 | 1.9 | 2.3 | 173.5 | 215 |
| S-1 | 0.77 | 0.96 | 2.6 | 3 | 402 | 207.5 |
| S-2 | 0.97 | 0.8 | 2.3 | 1.6 | 196.5 | 203 |
| S-3 | 0.89 | 0.8 | 2.2 | 1.1 | 213.5 | 200.5 |
| S-4 | 0.96 | 1.14 | 2.2 | 1.5 | 190 | 215 |
| S-5 | 1.43 | 0.82 | 1.4 | 1.6 | 379 | 210.5 |
| B-5 | 12.45 | | 0.4 | | 181.5 | |
| B-6 | 14.34 | 14.34 | 0.3 | 0.3 | 181 | 181 |
| B-7 | 14.8 | | 1.5 | | 189.5 | |
| B-8 | 13.75 | | 0.4 | | 186.5 | |
| B-9 | 15.72 | 15.72 | 0.2 | 0.3 | 186.5 | 186.5 |
| B-10 | 18.2 | | 0.2 | | 184.5 | |
| B-11 | 14.84 | | 0.2 | | 180.5 | |
| B-12 | 13.9 | 13.9 | 0.3 | 0.4 | 177 | 177 |
| B-13 | 19.8 | | 0.2 | | 173.5 | |
| E-1 | | 8.5 | | 0.5 | | 176.5 |
| E-2 | | 8.5 | | 0.4 | | 166 |
| E-3 | | 8.5 | | 0.3 | | 176.5 |
| E-4 | | 8.5 | | 0.3 | | 170 |
| E-5 | | 8.5 | | 0.3 | | 169 |

**Table I.5.3 Quality of Surface Water along Proposed Approach Channel in September and December 2001 (Chemical Oxygen Demand, and Total Oil and Grease)**

| | Total Oil mg/ltr (Sep) | Total Oil mg/ltr (Dec) | COD mg/ltr (Sep) | COD mg/ltr (Dec) |
|---|---|---|---|---|
| **A-1** | 31.30 | 23.5 | 86.1 | 111.8 |
| **A-2** | 19.30 | 17 | 90.7 | 198.8 |
| **A-3** | 14.30 | 18.3 | 104.3 | 111.8 |
| **B-2** | 9.50 | 0 | 132.6 | 0 |
| **B-3** | 2.30 | 0 | 204.0 | 0 |
| **B-4** | 0 | 0 | 182.4 | 0 |
| **M-1** | 0 | 0 | 0 | 0 |
| **M-2** | 0 | 0 | 0 | 0 |
| **S-1** | 0 | 0 | 56.7 | 0 |
| **S-2** | 0 | 0 | 70.3 | 0 |
| **S-3** | 1.00 | 0 | 66.9 | 0 |
| **S-4** | 0.50 | 0 | 77.1 | 0 |
| **S-5** | 1.00 | 0 | 119.0 | 0 |
| **B-5** | 0 | | 102 | |
| **B-6** | 0 | 0 | 98.6 | 98.6 |
| **B-7** | 0 | | 60.1 | |
| **B-8** | 0 | | 65.7 | |
| **B-9** | 0 | 0 | 79.3 | 79.3 |
| **B-10** | 4.25 | | 65.7 | |
| **B-11** | 13.8 | | 66.9 | |
| **B-12** | 13.5 | 13.5 | 58.6 | 58. 6 |
| **B-13** | 8 | | 53.3 | |
| **E-1** | | 5.5 | | 242.2 |
| **E-2** | | 10.8 | | 285.7 |
| **E-3** | | 12.5 | | 173.9 |
| **E-4** | | 17.5 | | 62.1 |
| **E-5** | | 9 | | 211.2 |

## I.6.1 Seabed Quality Survey

**Table I.6.1 Granulometry in Alternate Deposition Area**

| | FINE SAND (%) | SILT (%) | CLAY (%) |
|---|---|---|---|
| **Station E-1** | 63.4 | 22.6 | 14 |
| **Station E-2** | 60.9 | 25.1 | 14 |
| **Station E-3** | 66.2 | 20.3 | 13.5 |
| **Station E-4** | 66.6 | 18.4 | 15 |
| **Station E-5** | 59.6 | 25.4 | 15 |

**Table I.6.2 Loss on Ignition Results, Front of Wharf, Rainy Season**

| STATION | A S H | VOLATILE MATERIAL |
|---|---|---|
| **A-1** | 89.57 % | 10.43 % |
| **A-2** | 89.65 % | 10.35 % |
| **A-3** | 94.27 % | 5.73 % |

**Table I.6.3 Loss on Ignition Results, Front of Wharf, Dry Season**

| STATION | A S H | VOLATILE MATERIAL |
|---|---|---|
| **A-1** | 85.86 % | 14.14 % |
| **A-2** | 92.50 % | 7.50 % |
| **A-3** | 86.89 % | 13.11 % |

**Table I.6.4 Loss on Ignition Results Alternative Deposition Area, Dry Season**

| STATION | A S H | VOLATILE MATERIAL |
|---|---|---|
| **E-5** | 89.38 % | 10.62 % |
| **E-4** | 89.57 % | 10.43 % |
| **E-3** | 90.74 % | 9.26 % |
| **E-2** | 90.74 % | 9.26 % |
| **E-1** | 91.96 % | 8.04 % |

## I.7 Seabed Benthic Organism Survey

**Table I.7.1 Density in Rainy Season**

| Species | Stations | | | | | | | | | | | | | | | | | | | | | Density Total Species |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | B-2 | B-3 | B-4 | S-1 | S-2 | S-3 | S-4 | S-5 | A-1 | A-2 | A-3 | M-1 | M-2 | B-5 | B-6 | B-7 | B-8 | B-9 | B-10 | B-11 | B-13 | B-13 | |
| Acesta lopezi lopezi | 171 | 29 | | 71 | | 229 | | 143 | | | 200 | 86 | 114 | | | | | | | | | | 1043 |
| Americonuphis sp | | | | | | | | | | | | | | 14 | 14 | 29 | 43 | 14 | | 14 | 14 | | 142 |
| Amphiodia oerstedi | | | | | | 57 | 57 | 43 | | | | 29 | 100 | | | | | | | | | | 286 |
| Anadara grandis | 14 | | 29 | | | 86 | | | | | | 114 | 143 | | | | | | | | | | 386 |
| Ancistrosyllis ocellata | 29 | | | | | | | | 57 | 14 | 14 | 57 | 86 | | | | | | | | | | 257 |
| Aratus sp. | 29 | 57 | 57 | | | 71 | | | 86 | 14 | | | 14 | | | | | | | | | | 328 |
| Armandia salvadoriana | | | 71 | | 100 | 171 | 71 | 57 | 57 | 143 | 157 | | | | | | | | | | | | 827 |
| *Callinectes toxotes* | | | | | | | | | | | | | | 14 | 29 | 14 | 14 | 29 | | 29 | 14 | | 143 |
| Capitella capitata | | | 57 | 71 | 86 | | 14 | | 29 | 114 | 86 | 29 | | | | | | | | | | | 486 |
| Cerithidea sp | | | | | | | | | | | | | | 14 | | 29 | | | 14 | 14 | | 57 | 128 |
| Chone minuta | | | 171 | 86 | 57 | 114 | 214 | | 71 | | 100 | | | | | | | | | | | | 813 |
| Dasybranchus lumbricoides | | | | 71 | | 100 | | 43 | | | 43 | | | | | | | | | | | | 257 |
| Diopatra ornata | | | | | 71 | | 71 | | | 71 | 14 | 57 | | 43 | 57 | | 14 | 14 | | 14 | 14 | | 440 |
| Eteone estuarina | | | | 29 | | | | | | 14 | | | | | | | | | | | | | 43 |
| Eunoe sp1 | | | | | | 71 | | | | | | 14 | 57 | | | | | | | | | | 142 |
| Glycinda paucignatha | | 43 | | 43 | | | 43 | | | | | 43 | | 71 | | | | | | | | | 243 |
| Haploscolopos elongatus | | 29 | | | 29 | | | | 14 | | | | 57 | | | | | | | | | | 129 |
| Laeoneris uncinigera | | | 57 | | | 57 | | 29 | 100 | | 114 | | 71 | | | | | | | | | | 428 |
| Magelona pacifica | 29 | | | | | 43 | | | | | | | | | | | | | | | | | 72 |
| Magelona sp | 14 | | | | 57 | | | 71 | | 57 | 71 | | 71 | | | | | | | | | | 341 |
| Menipe frontalis | | | | | | | | | | | | 114 | 29 | | | | | | | | | | 143 |
| Mytella guyanensis | | | | 86 | 114 | | | | 57 | 14 | 14 | | | | | | | | | | | | 285 |

## Table I.7.2 Density in Rainy Season

| SPECIES | STATIONS | | | | | | | | | | | | | | | | | | | | | DENSITY/TOTAL SPECIES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | B-2 | B-3 | B-4 | S-1 | S-2 | S-3 | S-4 | S-5 | A-1 | A-2 | A-3 | M-1 | M-2 | B-5 | B-6 | B-7 | B-8 | B-9 | B-10 | B-11 | B-13 | B-13 | |
| Nephtys oculata | | | | 29 | | | | | 114 | | | | | | 57 | | | | | | | | 200 |
| Nerita sp | 43 | | 14 | 114 | | | | | 86 | 57 | 29 | | | | | | | | | | | | 343 |
| Opisthosyllis arboricora | | | | | | | 57 | | | | | | | | | | | | | | | | 57 |
| Pachygrapsus transversus | | 71 | | 86 | | | 86 | | | | | | | | | | | | | | | | 243 |
| Paraprionopio pinnata | 171 | | 100 | | 129 | | | 71 | | 171 | 29 | | | 43 | | | | | | | | | 714 |
| Penaeus californiensis | 29 | 29 | | | 29 | | 57 | | 86 | | | 57 | | 57 | | | 14 | | | 14 | | | 372 |
| Penaeus stylirostris | | | | | | 57 | | | | | | | | 86 | | | 114 | | | 29 | | | 286 |
| Penaeus vannamei | | 14 | 29 | 29 | | 14 | | 100 | | | 43 | | 71 | 29 | | | | | | | | | 329 |
| Pinnixa valeril | 43 | | 71 | | 14 | | | | | | | | | | | | | | | | | | 128 |
| Portunus sp | | | | | | | | | | | | | | | | 14 | | | 29 | | | 14 | 57 |
| Protothaca sp | | | | | | | | | | | | | | 14 | | 14 | 43 | | 14 | 29 | | 14 | 128 |
| Renilla sp | | | | | | 43 | | | | | | 57 | 114 | | | | | | | | | | 214 |
| Sipunculus nudus | 57 | 29 | 71 | | | | | | | | | | | | | | | | | | | | 157 |
| Sipunculus phalloides | | 43 | | 86 | | 29 | 129 | | | | | 29 | 57 | | | | | | | | | | 373 |
| Telina sp1 | 14 | | | | 57 | 14 | | | 14 | 114 | 14 | 14 | 57 | | | | | | | | | | 298 |
| Telina sp2 | | 43 | | | | 100 | | | | | | 29 | 14 | | | | | | | | | | 186 |
| Uca beebei | | 57 | | 71 | | | 71 | | 71 | 57 | 14 | | | | | | | | | | | | 341 |
| Uca limicola | 57 | | 71 | 86 | | 14 | | | | | | 43 | 14 | | | | | | | | | | 285 |
| DENSITY/STATION | 700 | 444 | 795 | 958 | 743 | 1270 | 870 | 557 | 842 | 846 | 942 | 772 | 1069 | 385 | 157 | 100 | 242 | 57 | 57 | 143 | 42 | 85 | |
| DIVERSITY (H') | 2.2 | 2.3 | 2.3 | 2.6 | 2.3 | 2.6 | 2.2 | 2 | 2.4 | 2.2 | 2.3 | 2.5 | 2.6 | 2.1 | 1.3 | 1.6 | 1.5 | 1 | 1 | 1.9 | 1.1 | 0.9 | |
| EQUITATIVITY (J') | 0.8 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.8 | 0.8 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.8 | 0.9 | 0.9 | 1 | 0.7 | |

## Table I.7.3 Density in Dry Season

| | | | | |
|---|---|---|---|---|
| **Acesta lopezi lopezi** | | 43 | 86 | **129** |
| **Armandia salvadoriana** | 71 | 171 | 214 | **456** |
| **Ancistrosyllis ocellata** | 29 | | | **29** |
| **Chone minute** | 200 | 114 | 171 | **485** |
| **Capitella capitata** | 886 | 229 | 486 | **1601** |
| **Dasybranchus lumbricoides** | | 29 | 14 | **43** |
| **Laconeris unciniger a** | 29 | | 71 | **100** |
| **Diopatra ornata** | | | 14 | **14** |
| **Magelona sp** | 29 | | | **29** |
| **Glycinda paucignatha** | | 14 | | **14** |
| **Nephtys oculate** | | | 57 | **57** |
| **Parapriosnopio pinnata** | | 29 | | **29** |
| **Sipunculus nudus** | | 29 | 14 | **43** |
| **Sipunculus phalloides** | 29 | | 43 | **72** |
| **Telina sp1** | | 29 | 14 | **43** |
| **Telina sp2** | 14 | | | **14** |
| **Aratus sp.** | | | 29 | **29** |
| **Pinnixa valerii** | | 71 | 14 | **85** |
| **Uca beebei** | 29 | 14 | 29 | **72** |
| **Uca limicola** | | 29 | | **29** |
| **Eteone estuarina** | 71 | 14 | 29 | **114** |
| **Mytella guyanensis** | 29 | 86 | 57 | **172** |
| | | | | |
| **DENSITY/STATION** | **1416** | **901** | **1342** | |
| **DIVERSITY (H')** | **1.4** | **2.2** | **2.1** | |
| **EQUITATIVITY (J')** | **0.6** | **0.8** | **0.7** | |
| | | | | |

**Table I.7.4 Density in Dry Season (Additional Stations)**

| Species | Center | North East | North West | South East | South West | Total Density By Species |
|---|---|---|---|---|---|---|
| | | | | | | |
| **Eurysquilla veleronis** | 14 | 14 | | | 14 | **42** |
| **Protothaca sp** | 29 | 43 | | | 29 | **101** |
| **Cerithidea sp** | 29 | 14 | 14 | | | **57** |
| **Penacus vannamei** | | 14 | | 29 | | **43** |
| **Penacus californiensis** | 14 | 14 | 29 | 29 | 14 | **100** |
| **Penacus stylirostris** | 29 | 57 | 29 | 43 | 29 | **187** |
| **Paraprionopio pinnata** | 171 | 214 | 114 | 329 | 229 | **1057** |
| **Eunoe sp. 1** | 14 | 86 | 29 | 14 | 43 | **186** |
| **Diopatra ornata** | 71 | 43 | 29 | 29 | 43 | **215** |
| **Americonuphis sp** | | 29 | | 14 | 14 | **57** |
| | | | | | | |
| **Density/Station** | **371** | **528** | **244** | **487** | **415** | |
| **Diversity (H')** | **1.6** | **1.9** | **1.5** | **1.2** | **1.5** | |
| **Equitativity (J')** | **0.7** | **0.8** | **0.8** | **0.6** | **0.7** | |

**Table I.7.5 List of Marine Benthos Recorded in Vicinity of Cutuco Port**

| Taxonomic Group | Scientific Name |
|---|---|
| Algae (seaweed) | Bostrychyia moritziana |
| | Bostrychyia sp |
| | Cladophora sp |
| Segmented worms | Serpulid polychaete |
| Gastropod molluscs-snails | Nerita sp |
| | Cerithidea sp |
| Bivalve molluscs-clams | Ostrea iridescens |
| | Mytella guyanensis |
| | Polimesoda solida |
| Crustacea – chitons | Chiton stokesii |
| Crustacea – barnacles | Balanus sp |
| Crustacea - crabs | Menipe frontalis |
| | Grapsid crab |
| Crustacea – hermit crabs | Clibanarius panamensis |
| Sponges | Red sponge |
| | Yellow sponge |
| | White sponge |

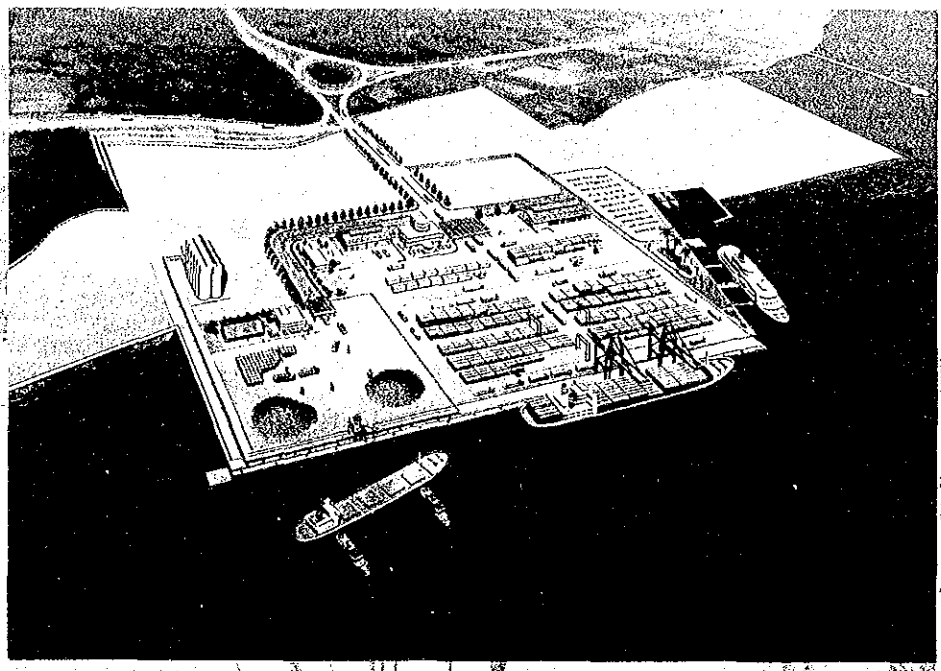
## I.8 Fishery Survey

**Table I.8.1 Annual Volume of El Salvador Fish Catch (metric tons) Between 1991 and 2000**

| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Industrial Fishing** | 2,013 | 2,821 | 4,012 | 4,228 | 4,910 | 6,391 | 4,229 | 4,821 | 2,921 | 2,099 |
| **Artisanal: Inshore** | 4,241 | 4,120 | 3,864 | 5,029 | 5,398 | 4,604 | 4,655 | 3,477 | 4,203 | 4,566 |
| **Artisanal: Lakes** | 4,345 | 5,136 | 4,461 | 3,818 | 4,325 | 2,966 | 2,809 | 2,443 | 2,653 | 2,830 |
| **TOTAL** | 10,599 | 12,077 | 12,337 | 13,075 | 14,533 | 13,961 | 11,693 | 10,741 | 9,777 | 9,495 |

**Table I.8.2 Annual Catch (metric tons) of Main Species in Fonseca Gulf (1990-1996)**

| SPECIES | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 |
|---|---|---|---|---|---|---|---|
| **Shark** | 254.5 | 381.6 | 145.1 | 106.0 | 130.8 | 19.2 | 90.9 |
| **Red Snapper** | 196.0 | 490.9 | 67.3 | 108.4 | 100.8 | 117.3 | 51.6 |
| **Grouper** | 155.8 | 250.2 | 89.4 | 114.6 | 87.4 | 56.3 | 85.2 |
| **Mackerel** | 0.4 | 80.5 | 10.1 | 15.0 | 13.9 | 7.0 | 8.3 |
| **Catfish** | 0.9 | 178.1 | 0.1 | | 0.17 | 3.0 | 12.2 |
| **Other fish** | 673.0 | 1853.90 | 104.0 | 135.7 | 143.8 | 154.6 | 129.4 |
| **Shrimp** | 152.6 | 240.4 | 182.2 | 163.9 | 75.8 | 210.6 | 146.6 |
| **Other Crustaceans** | 128.1 | 244.1 | 14.9 | 19.9 | 17.2 | 39.9 | 7.2 |
| **Molluscs** | 405.4 | 521.1 | 4.2 | 4.3 | 2.0 | 6.1 | 1.9 |
| **Turtle eggs** | 0.1 | | | | | | |
| **TOTAL** | 3956.8 | 7980.3 | 617.3 | 667.7 | 572.1 | 714.0 | 533.3 |



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