

1 **3.11 UTILITIES**

2 This section describes the utility delivery system and quantities of utility use under baseline
3 conditions, including potable water and fire protection distribution, wastewater collection and
4 treatment, stormwater collection, electrical and natural gas, telecommunications, and solid
5 waste systems. The utility infrastructure is still owned by Navy, unless otherwise noted.
6 Portions of the utility infrastructure cross the property that was appropriated by FHWA and
7 transferred to Caltrans; under the terms of the appropriation, that infrastructure is owned by
8 Caltrans. San Francisco personnel are granted periodic access to the property to maintain the
9 infrastructure. While this section describes the current condition of utility systems, levels of use
10 or consumption represent baseline conditions (1993 units). Most buildings at NSTI, including
11 housing units, were not individually metered for utilities.

12 **3.11.1 Potable Water and Fire Protection Water**

13 NSTI has a combined potable water and fire protection distribution system. The San Francisco
14 Water Department supplies water to NSTI through its 10-inch (25.5-cm) diameter steel main
15 attached to the SFOBB. According to the San Francisco Water Department (San Francisco Water
16 Department 1998), the maximum pump rate for that line is 1,750 gallons per minute (6,624 liters
17 per minute).

18 Emergency backup water service has been provided by the East Bay Municipal Utilities District
19 (EBMUD) through a Navy-owned, 12-inch (30.5-cm), cement-lined steel pipe attached to the
20 SFOBB. This pipe is connected to a Navy-owned pump station in Pier E-23 of the SFOBB and
21 connects at the east end of the SFOBB with approximately 13,000 feet (3,962-m) of Navy-owned
22 land-based pipeline of 12-inch (30.5-cm) and 14-inch (35.6-cm) diameter that originates at a
23 connection to an EBMUD water main in Emeryville. The water is treated with chloramines
24 before delivery to NSTI. The line is used to supply water to SFOBB fire hydrants; however, it
25 has not been used for hydrants since 1999. Total capacity of the system is about 2 million
26 gallons per day (MGD) (7.5 million liters per day).

27 Water from the San Francisco main is routed into four concrete reservoirs on Yerba Buena
28 Island, which have a total storage capacity of approximately 6.5 million gallons (24.5 million
29 liters) (DON 1994b). The capacity and use of each reservoir is summarized in Table 3.11-1. Use
30 of Reservoir 242 is reserved for fire protection purposes, with a capacity adequate for five hours
31 of firefighting demand (San Francisco 1995b). Reservoir 242 has been drained and repaired;
32 Reservoir 168 is currently out of service but has not been drained; Reservoir 227 was inspected
33 by a dive team, was drained in 1998, and remains out of service since its three million gallon
34 capacity is not required for the current operation of the islands (DON 2001; San Francisco
35 1998a). With some maintenance and repair, all of the reservoirs are serviceable.

36 The original potable water distribution system, constructed in 1939, was separate from the fire
37 protection system. This separate system was replaced in 1989-1990 with a combined system.
38 All areas are supplied by gravity except for one housing area on Yerba Buena Island that is
39 supplied from Reservoir 168 by a booster pump. Water from Reservoir 227 is supplied to
40 Treasure Island through an 18-inch (46-cm) main with a maximum flow rate of approximately
41 7,900 gallons (29,905 liters) per minute. A 22-inch (56-cm) backup main runs parallel to the 18-
42 inch (46-cm) main.

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**Table 3.11-1
Water Storage Capacity at NSTI (Yerba Buena Island)**

<i>Reservoir</i>	<i>Capacity (million gallons)</i>	<i>Water Elevation Range (feet above mean sea level)</i>	<i>Use</i>
227	3.0	252.5 to 255.5	Primary potable water supply to Treasure Island
162	2.0	322.0 to 327.0	Supplies potable water to Yerba Buena Island
242	1.0	247.0 to 251.0	Reserved for fighting fires
168	0.5	356.0 to 359.0	Supplies potable water to Yerba Buena Island
(Total capacity)	6.5	-	-

Source: DON 1994b.

1 The present system is equipped with sectioning valves that allow sectors to be isolated for
2 maintenance and repair. The distribution system, which includes a chlorination unit, is in
3 good condition and received regular preventive maintenance. The polyvinyl chloride (PVC)
4 piping in the distribution system, which is present in limited sections, does not conform to San
5 Francisco Water Department standards (San Francisco 1996e). The fire hydrants do not possess
6 backflow regulators. The total capacity of the system is approximately 2 MGD (7.5 million liters
7 per day) (San Francisco 1995b). Baseline domestic water use was 0.96 MGD (3.6 million liters
8 per day) (DON 1997c).

9 3.11.2 Wastewater Collection and Treatment

10 The wastewater collection system was constructed in 1939 and was upgraded in 1984 (DON
11 1994b). Approximately 52,600 linear feet (16,032 linear m) of 4-inch (10-cm) to 16-inch (40.5-cm)
12 diameter pipes collect the wastewater. Wastewater flows through collection piping from
13 gravity and pumping. The system includes 24 lift stations of varying configurations and
14 equipment. The collection system at Yerba Buena Island is linked to Treasure Island by an
15 underwater 6-inch (15-cm) force main. There is also a sewer line connecting the two islands
16 along the causeway.

17 The current condition of the collection system is fair (DON 2001). Some elements of the plant
18 are in need of repair (San Francisco 1995b). About a third of this system was cleaned and
19 inspected in 1997; repairs were made to the most critical deficiencies (San Francisco 1998a). The
20 wastewater collection system does not conform to San Francisco standards (San Francisco
21 Public Utilities Commission 1998). The plant is constructed on unreinforced ground adjacent to
22 the shoreline, where lateral spreading of 10 feet (3 m) or greater during a severe earthquake is
23 considered a possibility (San Francisco 1995b).

24 Wastewater flows to the wastewater treatment plant in the northeast corner of Treasure Island.
25 The plant, constructed in 1990, provides secondary treatment and has a design capacity of
26 approximately 2 MGD (7.5 million liters per day), wet weather capacity of approximately 8
27 MGD (30 million liters per day), and storage tanks that provide 200,000 gallons (757,082 liters)
28 of pre-treatment storage. The plant has a minimum treatment requirement of approximately
29 200,000 MGD (757,082 million liters per day) and is capable of providing service to a residential

1 population of about 22,000 people. Under a RWQCB permit, the wastewater treatment plant is
2 permitted to discharge up to approximately 2 MGD (7.5 million liters per day) of treated
3 effluent to San Francisco Bay. Following treatment, residual solids are disposed of at Redwood
4 Landfill in Marin County. Baseline sewage generation was 0.04 MGD (0.15 million liters per
5 day)(DON 1997c).

6 3.11.3 Stormwater Collection

7 Storm drains throughout NSTI collect stormwater and convey it via 4-inch (10-cm) to 42-inch
8 (107-cm) pipelines to outfalls. There are 49 outfalls at the perimeter of Treasure Island and 26 at
9 Yerba Buena Island. San Francisco's assessment of the collection system indicated potential
10 problems, including crushed pipe, redwood pipe, asbestos cement pipe, and cross connections,
11 which may be contributing to petroleum contamination of the Bay (San Francisco Department
12 of Public Works 1996). The problem with cross connections has been resolved, and problems
13 related to the nonstandard materials and age of the system require repair and replacement
14 actions (DON 2001). The stormwater collection system does not conform to San Francisco
15 standards (San Francisco Public Utilities Commission 1998). The system operates under a
16 NPDES statewide General Permit for Stormwater Discharges Associated with Industrial
17 Activities. Stormwater quality with respect to urban pollutants is discussed in section 3.10,
18 Water Resources. Stormwater contamination due to hazardous materials, spills, and leaks is
19 discussed in section 3.13, Hazardous Materials and Waste.

20 3.11.4 Electrical and Natural Gas Systems

21 *Electricity Distribution*

22 Electricity is supplied to NSTI through a Navy-owned 12.5-kilovolt (kV) underwater cable,
23 which originates at a connection at the eastern end of the SFOBB. At that point, the underwater
24 cable connects to a Navy-owned 12.5-kV overhead line originating at the Navy's Davis
25 Substation, located at the former Fleet and Industrial Supply Center (FISC) in Oakland (DON
26 1996d; DON 2001). Western Area Power Administration (WAPA) power (115 kV) supplied to
27 the substation is stepped down to 12.5 kV for transmission to NSTI. WAPA electricity is
28 generated by 55 hydroelectric plants with a combined capacity of 10,600 megawatts. The Pacific
29 Gas and Electric Company (PG&E) provides secondary electrical power to NSTI via a 12.5-kV
30 underwater cable originating at PG&E Substation J in San Francisco.

31 The main electrical substation is in Building 3 on Treasure Island. From here, four underground
32 12.5-kV feeders extend to the NSTI distribution system. In addition, two 4.16-kV feeders supply
33 power to Yerba Buena Island (DON 1985). The electrical distribution system at NSTI was
34 upgraded in the early 1980s. The system is in good condition and is capable of providing
35 service to existing load demands (San Francisco 1995b; DON 2001). The Yerba Buena Island
36 distribution system is aging and in need of replacement. Individual buildings at NSTI are not
37 metered, and most meters serve multiple buildings or customers.

38 *Natural Gas Distribution*

39 PG&E provides natural gas transmission service to the NSTI main metering station, located
40 near the steam plant (Building 455), via a 10-inch (25.5-cm) 120-pounds per square inch (psi)

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1 (8.4 kilograms [kg] per square cm [cm²]) underwater main from the East Bay. This main has a
2 capacity of 700,000 cubic feet (178,360 m³) per hour, which is 130 percent of the current load.

3 Four distribution systems (referred to as A, B, C, and D) supplied both Treasure Island and
4 Yerba Buena Island with natural gas. The Existing Conditions Report (San Francisco 1995b)
5 determined that the distribution system is in adequate condition for current needs. Buildings
6 and customers on the islands are not individually metered. System A, installed in 1965, delivers
7 service (mostly via steel pipe) at 10 psi (0.7 kg per cm²). System B was installed in 1965 to
8 provide natural gas to steam plants. The steel lines provide gas at 10 psi (0.7 kg per cm²) to
9 steam plants located in Buildings 455 and 540. System C was installed in 1970 to provide
10 service to the fire fighting school and the steam generation plant at Building 550. Gas is
11 provided through an 8-inch (20-cm) diameter steel pipe at 20 psi (1.4 kg per cm²). System D
12 was installed in 1985 to provide service to the steam plants at Buildings 520 and 530. Gas is
13 provided at 20 psi (1.4 kg per cm²) through a 4-inch (10-cm) diameter PVC pipe.

14 3.11.5 Telecommunications

15 A conduit on the SFOBB provides telecommunications connections to NSTI from San Francisco
16 through trunk lines installed in 1989. The system consists of basic T-1 trunks (24 voice channels
17 per T-1, over 2 twisted pairs) grouped in cables of 100 to 1,200 copper pairs. The copper cable,
18 consisting of 9,375 cable pairs, is in excellent condition (DON 1996l).

19 The NSTI telecommunications system was designed for the specific requirements of Navy and
20 tenant organizations. The telephone component of the telecommunications infrastructure was
21 installed in 1989 using both new and used equipment (DON undated). Telecommunications at
22 NSTI were divided into three independent systems: the residential system, the Consolidated
23 Area Telephone System (CATS), and a classified system. The residential system is operated by
24 Pacific Bell, and CATS and the classified system were owned and operated by Navy (DON
25 1996d). CATS and the classified system are no longer in operation.

26 The residential system owned and operated by Pacific Bell provides standard "1+" service to
27 meet private needs at family residences, bachelor officers quarters, and bachelor enlisted
28 quarters. The service is connected to a cable hut at Yerba Buena Island from Pacific Bell's
29 central office switch at 611 Folsom Street in San Francisco. From the hut, the cable extends to
30 Building 1 via the causeway. The Pacific Bell system appears to be at capacity. The bachelor
31 officers quarters and bachelor enlisted quarters are underserved. In addition, the cable lines
32 have degraded to the point where only 25 percent are operable.

33 3.11.6 Solid Waste

34 Solid waste was collected either by Navy or a private contractor. The solid waste is delivered to
35 the Davis Street Transfer Station, and then it is transported to the Altamont Landfill (DON
36 1996e). The landfill receives an average of 6,000 tons (5,444 metric tons) per day from all
37 customers and can accept a maximum of approximately 11,150 tons (10,117 metric tons) per day
38 (Waste Management of Alameda County 1997). The landfill was recently expanded and will
39 reach capacity in approximately 30 years.

1 Weights are not routinely measured, as Navy's agreement with the contractor is based on the
 2 number of containers by volume removed, as shown in Table 3.11-2. Assuming that each
 3 emptied container was full, NSTI would have generated approximately 113,623 cubic yards
 4 (86,871 m³) or 14,203 tons (12,882 metric tons) of solid waste in fiscal year 1993 (FY93). In
 5 addition, Navy removed approximately 8,291 cubic yards (6,339 m³) or 1,037 tons (941 metric
 6 tons) of construction debris in FY93. Combining these two waste streams, the total amount of
 7 solid waste generated at NSTI in FY93 is estimated to be 15,240 tons (13,829 metric tons), an
 8 average of approximately 42 tons (38 metric tons) per day. The recycling program at NSTI is
 9 outlined in the solid waste management plan.

Table 3.11-2
Solid Waste Removed from NSTI (Fiscal Year 1993)

<i>Container Type</i>	<i>Volume of Container</i>	<i>Number of Containers Removed, FY93</i>
Waste container	50 cubic yards	312
Waste container	20 cubic yards	728
Waste container	5 cubic yards	13,156
Waste container	2 cubic yards	364
Can	32 gallons	105,144
Bag	variable	12,108
TOTAL	77 cubic yards/32 gallons	131,812
<i>Source: DON 1994b.</i>		

10 3.11.7 Steam Distribution

11 Five boiler plants supplied various areas of NSTI with steam for building space heating,
 12 domestic water heating, and galleys (DON 1994b). Steam was the primary source of heat for
 13 most nonresidential buildings at NSTI. Approximately 14,000 feet (4,267 m) of distribution pipe
 14 and approximately 14,000 feet (4,267 m) of condensate return pipe make up the distribution
 15 system. Over 70 buildings received steam at a pressure of 55 psi (3.9 kg per cm²) through
 16 insulated underground piping. The entire system was upgraded in 1983 and closed in 1997; the
 17 pipes remain in place.

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