
2 PROJECT DESCRIPTION

2.1 PROJECT LOCATION

San Onofre Nuclear Generating Station (SONGS) is located approximately 60 miles south of Los Angeles, and 50 miles north of San Diego in northern San Diego County. It lies approximately 5 miles south of downtown San Clemente, adjacent to San Onofre State Beach on Marine Corps Base (MCB) Camp Pendleton, and is bisected by Interstate 5 (I-5) (Figure 2.1-1). The facility is jointly owned by SCE (78.24 percent), San Diego Gas & Electric (20 percent), and the city of Riverside (1.79 percent). Pursuant to the owner's SONGS operating agreement, Southern California Edison (SCE) is the operating agent for the plant.

Both Primary Offshore Intake Structures (POISs) are within a 1-nautical-mile restricted access zone centered on SONGS (California Division of Boating and Waterways 2012).

2.2 BACKGROUND AND NEED FOR THE PROPOSED PROJECT

Section 2.C.(1) of State Water Resources Control Board's (SWRCB's) OTC Policy requires owners/operators of existing power plants with offshore intakes to "*install large organism exclusion devices having a distance between exclusion bars of no greater than nine inches, or install other exclusion devices, deemed equivalent by the State Water Board*" (see http://www.swrcb.ca.gov/water_issues/programs/ocean/cwa316/). SCE, through discussions with the SWRCB, has decided to install Large Organism Exclusion Devices (LOEDs) with a distance between exclusion bars not to exceed 9 inches. The LOEDs are intended to prevent large marine organisms from gaining access to the OTC system. The proposed Project is needed for SCE to comply with Section 2.C.(1) of the OTC Policy.

2.3 EXISTING FACILITIES

The Pacific Ocean is the source waterbody for SONGS' cooling systems. Independent cooling water systems provide water to SONGS Units 2 and 3 as part of the offshore cooling water system. Water first travels through the POIS, then flows into submerged intake conduits that ultimately deliver the water to the onshore intake structure.

The offshore intake structures associated with Units 2 and 3 extend approximately 3,200 feet seaward, in a water depth of approximately 30 feet (Figure 2.3-1). Each POIS is a reinforced concrete riser, 32 feet in diameter and 18 feet above the seafloor, that connects to the 18-foot, 10-inch-diameter (outside) intake conduit bringing seawater, used for cooling, into SONGS (Figure 2.3-2).

2. Project Description

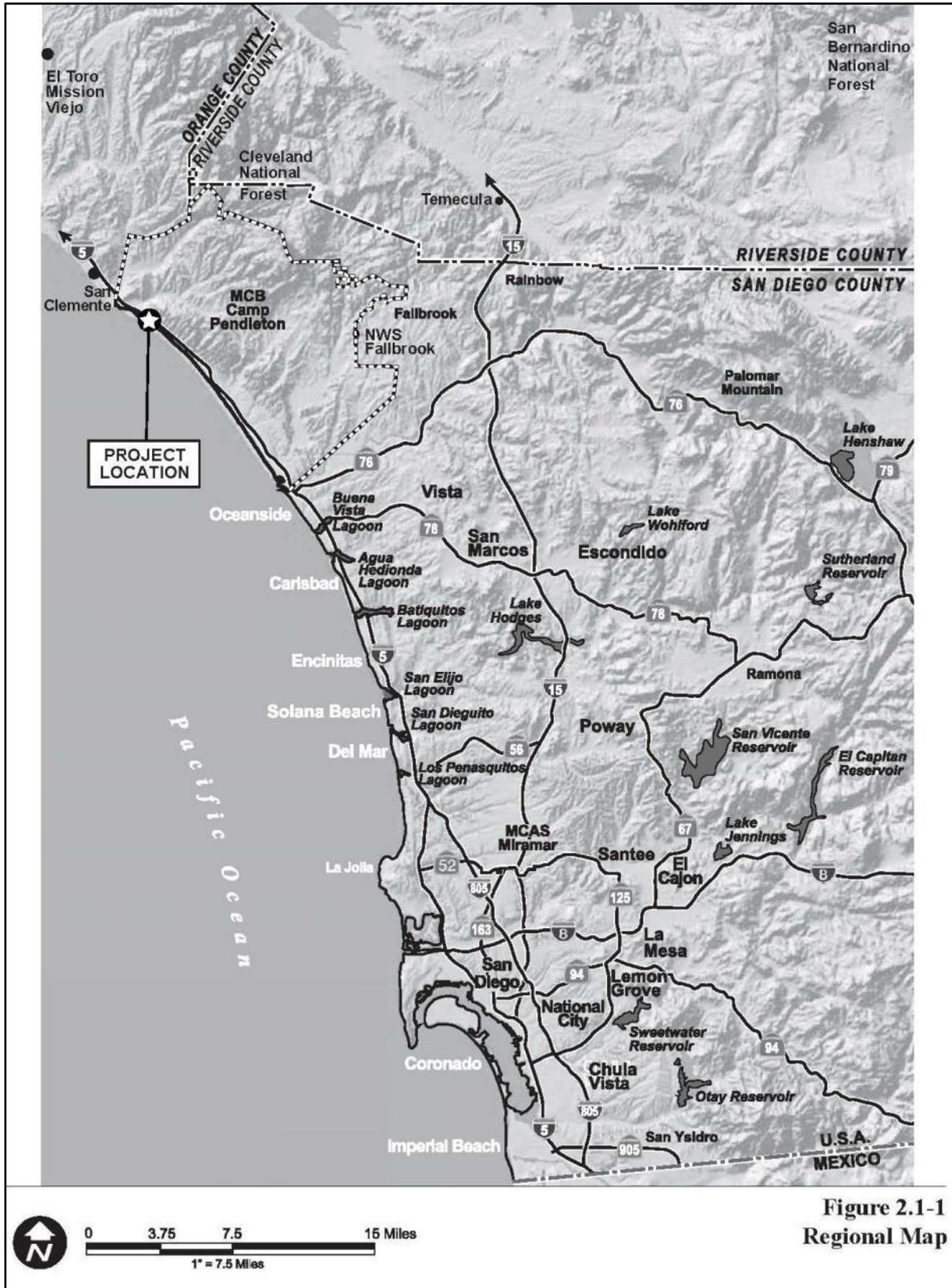


Figure 2.1-1
Regional Map



Figure 2.3-1. Vicinity Map

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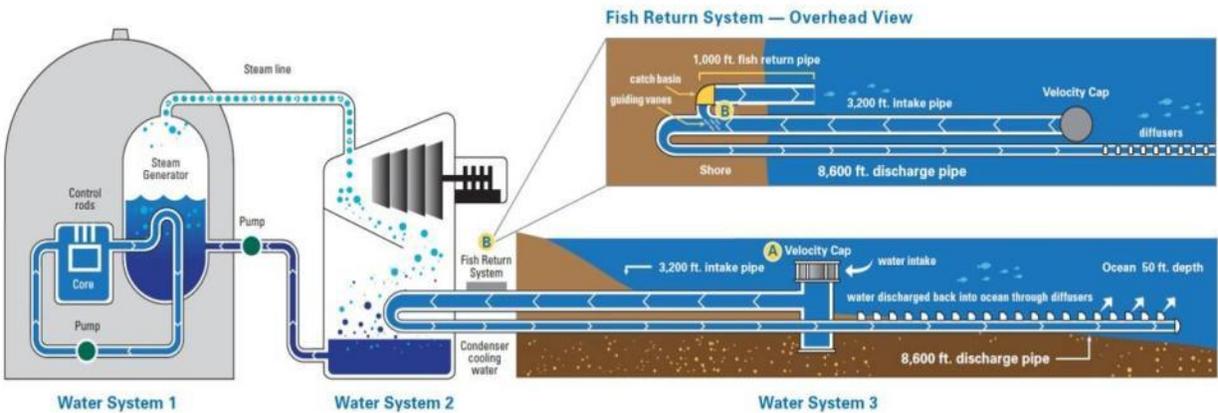
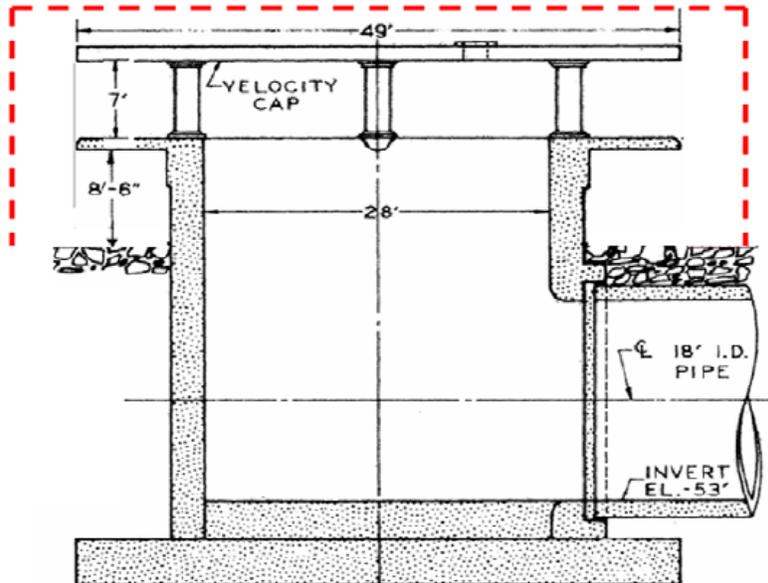


Figure 2.3-2. Schematic of SONGS Once-Through Cooling System
(Source: Adapted from Enercon 2012)

7
8

2. Project Description

1 A velocity cap, 49 feet in diameter, is attached to the top of the POIS to control
2 seawater flow rates entering the POIS. The velocity cap is constructed to provide a 7-
3 foot-wide gap to the top of the POIS (Figure 2.3-3). The velocity cap minimizes the
4 entrainment of fish into the OTC system by converting the vertical flow to a lateral flow,
5 thus triggering a flight response from the fish.
6



7
8 **Figure 2.3-3. Cross Section of the SONGS POIS**

9 (Source: Adapted from Enercon 2012)
10

11 The majority of the riser is buried below the seafloor and is constructed on a 49-foot-
12 diameter reinforced concrete footing, 4 feet thick and 6 feet thick for Units 2 and 3,
13 respectively. The footings are tremie-poured on top of undisturbed native material at the
14 base of the seafloor excavation. (Tremie is a concrete placement method that uses a
15 pipe, through which concrete is placed below sea level. The lower end of the pipe is
16 kept immersed in fresh concrete so that the rising concrete from the bottom displaces
17 the water without washing out the cement content.)
18

19 Special gravel backfill consisting of either crushed stone or river-run aggregate begins
20 at the top of the footing, and extends 1 to 2 feet above the top of the intake and
21 discharge conduits. The gravel backfill is covered by a 3-foot minimum stone blanket.
22 The stone blanket extends to a minimum of 30 feet radially around the edge of intake
23 structure riser (22 feet, 4 inches) from the outer edge of the velocity cap. The stone
24 blanket is composed of 50 percent by weight of 300- to 600-pound rock.
25

26 Each intake conduit is constructed parallel to the Unit's associated discharge conduit;
27 the two conduits are located within a single trench within the vicinity of the two POISs.
28 The trench is backfilled with the special gravel backfill described above. The two

1 conduits are located 40 feet on center from each other, and the discharge conduit is
2 located 13 feet, 2 inches away from the side of the POIS.

3
4 The two POISs are separated by a distance of 642 feet, with their associated discharge
5 conduits separated by a slightly greater distance. The two discharge conduits and
6 associated diffusers continue seaward for approximately 5,300 and 2,800 feet,
7 respectively, for Units 2 and 3. Auxiliary Offshore Intake Structures (AOISs) are located
8 on the intake conduit approximately 92 feet landward from the center of each POIS.

9
10 The seafloor surrounding each POIS is generally unvegetated and is composed of loose
11 sands and gravels. Over time, these surrounding sediments have migrated onto the
12 stone blanket. A recent inspection of each POIS showed an average depth of sediment
13 accumulation of approximately 21 inches across each stone blanket.

14
15 A terminal structure has been constructed at the ends of both the intake and discharge
16 conduits. The terminal structures rest on separate foundations that extend
17 approximately 30 feet beneath the ocean bottom and are surrounded by 4 feet of rock
18 cover at the ocean floor.

19 20 **2.4 DESCRIPTION OF PROPOSED PROJECT**

21
22 The LOEDs have been designed and are being installed to prevent the entrapment in
23 the POISs of large marine organisms (e.g., Pacific harbor seal [*Phoca vitulina*],
24 California sea lion [*Zalophus californianus*], green sea turtle [*Chelonia mydas*], giant sea
25 bass [*Stereolepis gigas*], and large white sea bass [*Atractoscion nobilis*]).

26
27 The Project involves installing a LOED around each POIS at Units 2 and 3. The work
28 associated with the Project would be conducted primarily on barges staged on the
29 ocean surface and anchored above the existing intake structures, and on the seafloor
30 immediately adjacent to the area surrounding each POIS.

31 32 **2.4.1 Anchoring Strategy**

33
34 As part of the potential disposition of the SONGS Unit 1 intake and discharge conduits,
35 an engineering study was prepared (Gerwick 2003) to analyze oceanographic
36 conditions for assessing barge mobilization and anchoring. The discussion here is
37 based on that analysis because the oceanographic conditions and benthic
38 characteristics around the SONGS Units 2 and 3 POIS would be largely similar to that
39 expected around the Unit 1 cooling water pipelines. Consistent with the Gerwick
40 analysis, barge moorings for the LOED installation are based on anchoring a suitable
41 crane barge (e.g., 260-foot by 66-foot “Viking” crane barge; Figure 2.4-1).

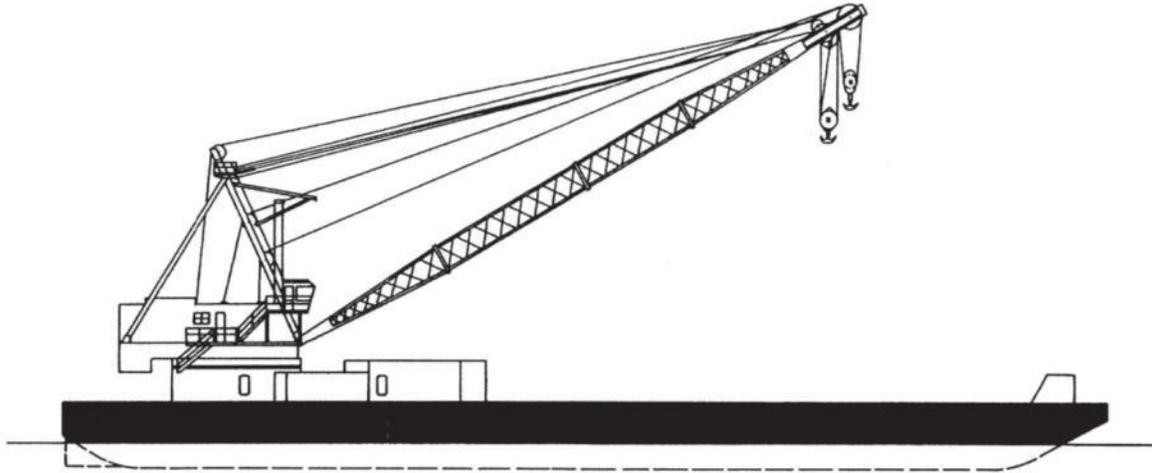


Figure 2.4-1 Typical Barge Crane

The crane barge anchorage is assumed to consist of four 15,000-pound drag anchors in a four-point spread-mooring configuration using 2-inch mooring lines. The crane barge required for the work would have the following typical specifications (Table 2.4-1).

**Table 2.4-1
Typical Crane Barge Specifications**

Typical Characteristics	Dimensions
Overall Length	260 feet
Overall Beam	66 feet
Depth	16 feet
Mean Draft	6 feet
Deck to boom heel distance	15 feet
Boom length main to whip	7 feet
Above-deck forward/aft windage area	1,400 square feet (ft ²)
Above-deck side windage area	2,300 ft ²

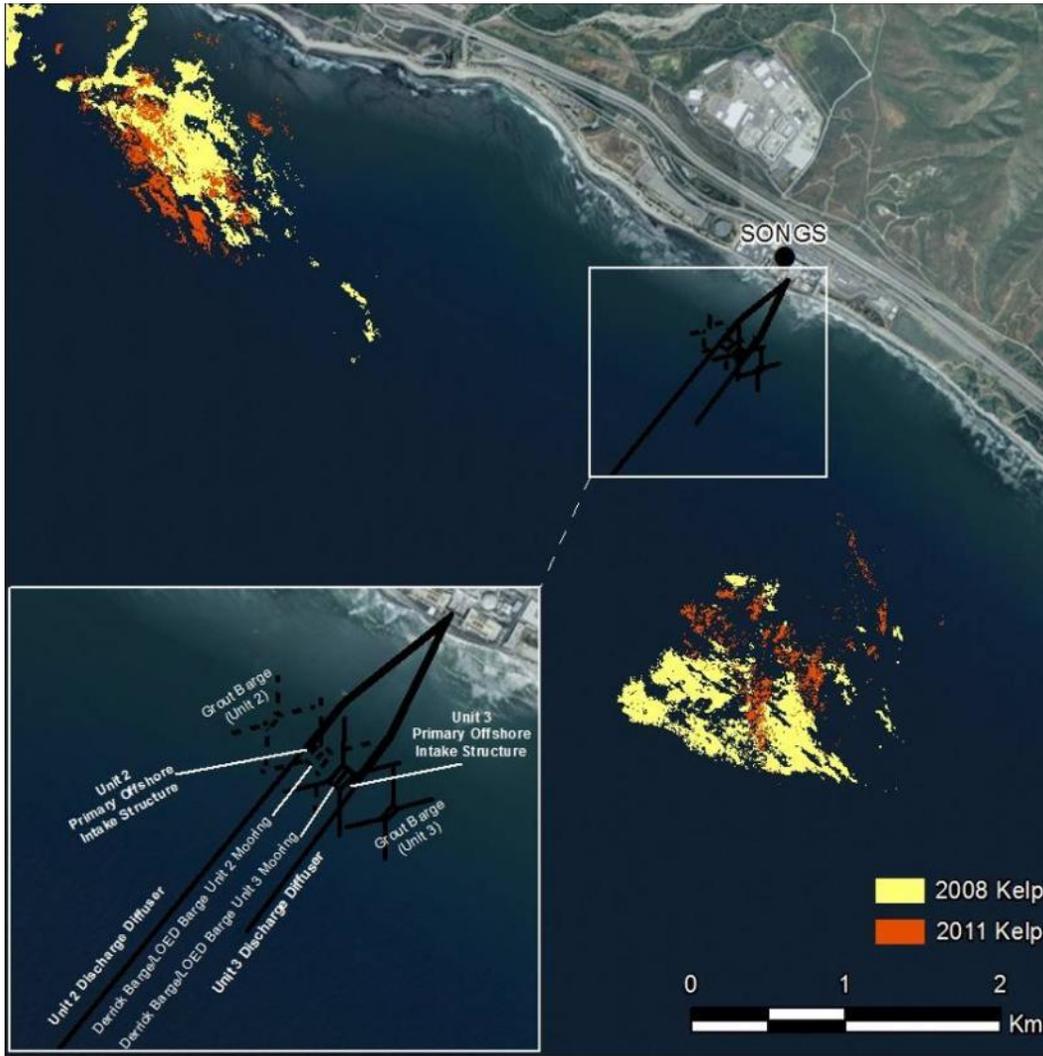
(Source: Adapted from Gerwick 2003)

Wind and wave forcing accounted for storm conditions associated with a 5-year return storm, which are:

- Wind speed: 28 knots (nautical miles per hour)
- Current speed: 1.5 knots
- Wave height: 10 feet
- Wave period: 10 seconds

It has been assumed that currents would be aligned approximately parallel to the shoreline and that prevailing winds and waves would arrive from northwesterly, westerly or southwesterly directions.

1 The approximate anchor drag distance for key-in was estimated at approximately 30
 2 feet. The engineering study (Gerwick 2003) concluded that using a four-point mooring
 3 system with 15,000-pound anchors would safely moor the barge under potential
 4 adverse weather conditions. The anchors would also have sufficient capacity to develop
 5 stable working conditions for the crane barge during work under prevailing weather
 6 conditions. Figure 2.4-2 shows a tentative anchoring strategy for the proposed Project.
 7



8 **Figure 2.4-2. Tentative Anchoring Plan, SONGS LOED**
 9

10 However, anchoring protocols and plans would be further developed in a contractor-
 11 developed anchoring plan that would serve to minimize benthic damage from deploying,
 12 utilizing, and recovering anchorages, while also establishing anchor zones to avoid or
 13 minimize turbidity and benthic biology impacts, avoid hard rock resources and kelp
 14 beds, and avoid impacts to recreational and commercial boaters.
 15

1 **2.4.2 Large Organism Exclusion Device**

2
3 The LOED is an independent structural frame “cage” that would completely enclose
4 each existing POIS. The LOED is a passive, freestanding structure supported by an
5 independent concrete foundation constructed on top of the existing stone blanket
6 surrounding each POIS. Major considerations that influenced the design of the LOED
7 included the following:

- 8 • compliance with the OTC policy requirement that the distance between bars must
9 be no greater than 9 inches;
- 10 • the selection of appropriate materials capable of resisting the corrosive effects of
11 the harsh marine environment, as well as the establishment of excessive marine
12 growth buildup;
- 13 • the ability to withstand marine debris buildup (particularly giant kelp [*Macrocystis*
14 *pyrifera*]) on the structure that could restrict flows, reduce head loss, or increase
15 flow velocities into the POIS;
- 16 • the ability to withstand significant seismic activity or large wave impacts;
- 17 • the need to control potential structural shifting to protect the AOIS on each
18 conduit;
- 19 • the need to avoid or minimize impacts to navigation; and
- 20 • the need to adequately attach to the existing stone blanket and special gravel
21 backfill surrounding the POIS.

22
23 The LOED is generally comprised of three major components:

- 24 • gravity base (concrete) foundation;
- 25 • stainless steel structural frame; and
- 26 • barrier bar panels.

27
28 Each of these components would be prefabricated at off-site inland locations, brought to
29 a coastal site for assembly into the final LOED structure, transported to the Project site
30 via barge, and lowered and positioned into place with a barge crane (see Figure 2.4-1).

31 The LOED is a 64-foot square structure, with chamfered corners (the corners are cut
32 away to make a symmetrical sloping edge), creating an eight-sided structure that would
33 stand 19 feet in height, approximately 1 foot above the top of the POIS velocity cap, and
34 approximately 6 feet, 7 inches below the surface of the water at mean lower low water
35 level (i.e., lowest low tide). The four primary walls of the structure are 36 feet long, and
36 the shorter “corner” walls are just under 20 feet in length (refer to Figure 2.4-3).

37

1 **2.4.3 Gravity Base Foundation**

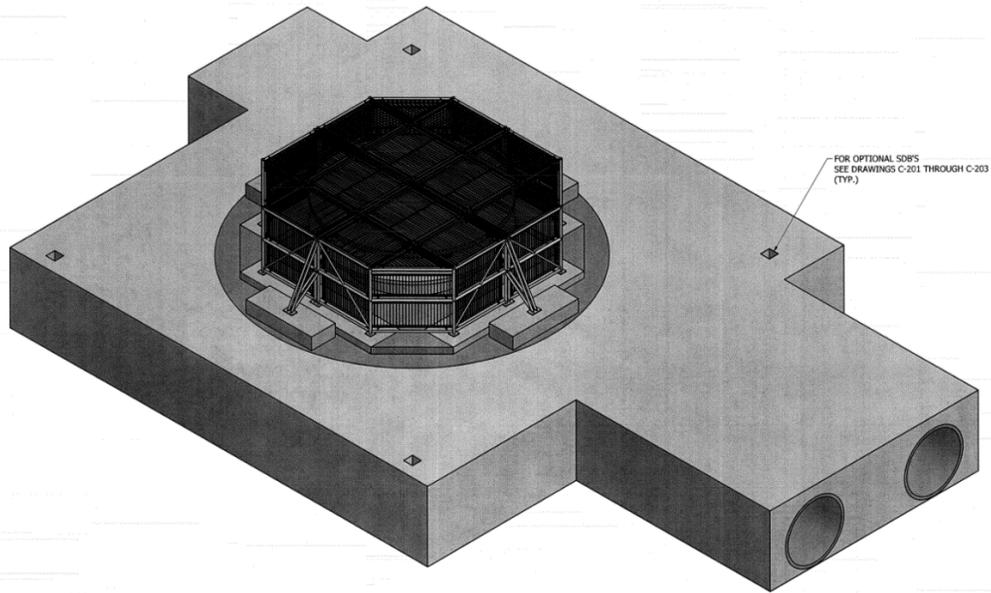
2
3 The LOED would be attached to the stone blanket around each POIS and held in place
4 by a gravity-based foundation composed of four large precast-concrete post foundation
5 panels. The current foundation panel design is undergoing final seismic review, and the
6 results of these tests may require redesign of one or more of the foundation panels.
7 However, the structural frame and barrier bar panel designs are not expected to change.
8

9 The structural frame would be attached to precast anchor bolts within these post
10 foundation panels. The foundation panels hold the LOED in place primarily through
11 sheer weight and would also be grouted to the stone blanket beneath. According to
12 SCE, the marine grout (Euco Non-Shrink Underwater Tremie Grout or equivalent) would
13 be flowable for pumping and would resist washout during underwater placement.
14

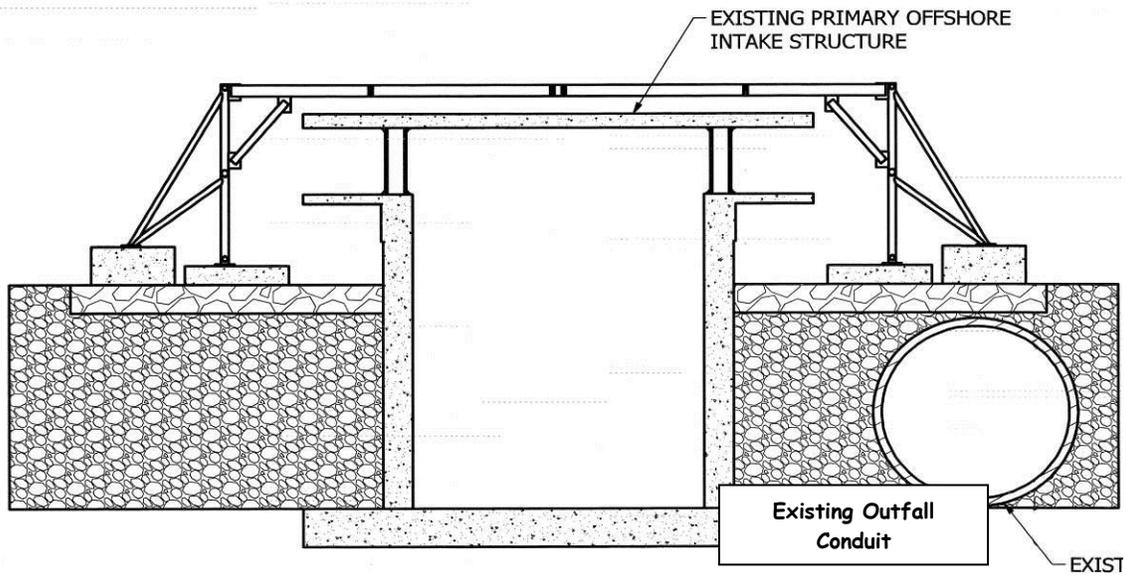
15 The LOED would be further held in place and also protected from lateral shifting by four
16 kicker foundation panels. The kicker panels are massive heavyweight concrete
17 foundations, located alongside and outside of each of the post foundation panels, and
18 similarly grouted to the stone blanket. The LOED would be attached to the kicker panels
19 by diagonal supports bolted to the foundation panels and attached to the main center
20 posts of the structural frame (Figures 2.4-4 and 2.4-5).
21

22 Additional stability and resistance to shifting would be provided by steel dowels drilled
23 into the stone blanket to align with preformed holes within each of the foundation
24 panels. The grout is pumped under the foundation panels and would penetrate
25 approximately 2 feet down into the riprap of the stone blanket to create a layer of
26 grouted riprap under the foundation.
27

28 The final construction of the LOED would leave open spaces on the stone blanket,
29 below the base of each corner panel and between the post foundation panels. These
30 spaces could allow entrance into the POIS by large marine organisms. Therefore, these
31 open spaces would be filled with supplemental rock fill consisting of 50 percent by
32 weight of 300 to 600 pounds stone, to ensure a maximum gap of 9 inches is maintained
33 at the base of the structure. Table 2.4-2 shows the estimated area and volume of impact
34 for each of the proposed post foundation panels, the kicker panels, and the
35 supplemental rock fill.



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Figure 2.4-3. Isometric and Cross Section Views of the Proposed LOED for SONGS Unit 2
(Source: Adapted from Enercon 2012)

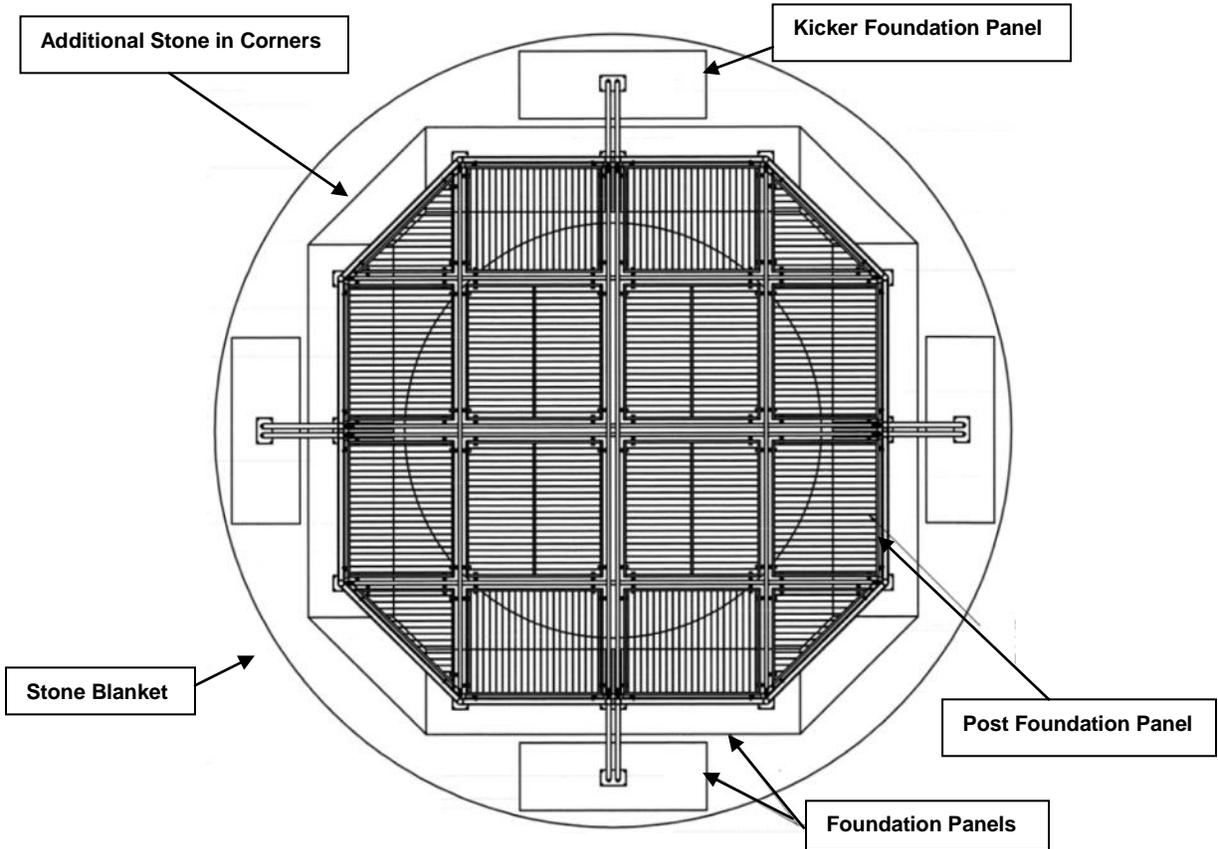


Figure 2.4-4. LOED Plan View – Foundation Panel Locations
 (Source: Adapted from Enercon 2012)

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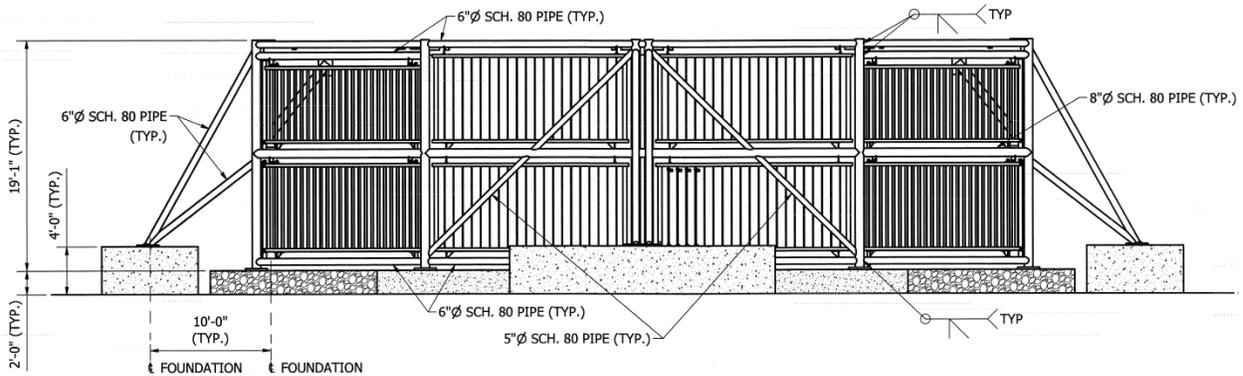


Figure 2.4-5. LOED Cross-Sectional View
 (Source: Adapted from Enercon 2012)

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Table 2.4-2
Estimated Area and Volume of Impact

Foundation Panels/ Fill Material	Area/Unit LOED (ft ²)	Area Total (ft ²) (both Units)	Volume/ Unit LOED (ft ³)	Volume Total (ft ³) (both Units)
Post Foundation Panels Four 10 ft x 44 ft x 2 ft thick/LOED	1,760	3,520	3,520	7,040
Kicker Foundation Panels Four 8 ft x 22 ft x 4 ft thick/LOED	704	1,408	2,816	5,632
Supplemental Rock Fill: Four "corners" approximately 92 ft ² x 2 ft thick/LOED	368	736	736	1,472
TOTAL	2,832	5,664	7,072	14,144

(Source: Adapted from SCE 2012)

3 Approximately 1.75 feet (21 inches) of material has accumulated on the stone blanket.
4 The accumulated sediment would be removed from the stone blanket and sidecast
5 around the perimeter of the POIS. The sediment must be removed to allow for the
6 installation of reinforced concrete foundation panels. The area to be dredged
7 encompasses a 50-foot-diameter circle, as measured from the center of the POIS. The
8 contractor would be directed to contain the sidecast material to the maximum extent
9 practicable within the CSLC easement footprint. A turbidity monitoring plan has been
10 prepared for the Project. Once approved by the agencies, it would be enforced and all
11 dredging and construction activities associated with the Project would be monitored to
12 ensure that they do not cause turbidity plumes in excess of natural turbidity as
13 compared to nearshore areas that did not receive a placement of sediments (SCE
14 2012).

15 Total area per POIS is approximately 6,964 ft². The total sediment that is expected to be
16 removed and sidecast per POIS is approximately 12,187 cubic feet (ft³) (or 451 cubic
17 yards), which is approximately 24,372 ft³ of sediment (or 902 cubic yards) for both Units
18 2 and 3 combined (SCE 2012).

19
20 Sediments to be removed are generally consistent with the sediments that compose the
21 surrounding seafloor. The Applicant is conducting a sediment analysis at each POIS,
22 and the final report will be provided to the USACE and other responsible agencies upon
23 request. It is anticipated that sediment would migrate, over time to cover the new
24 foundations panels (SCE 2012).

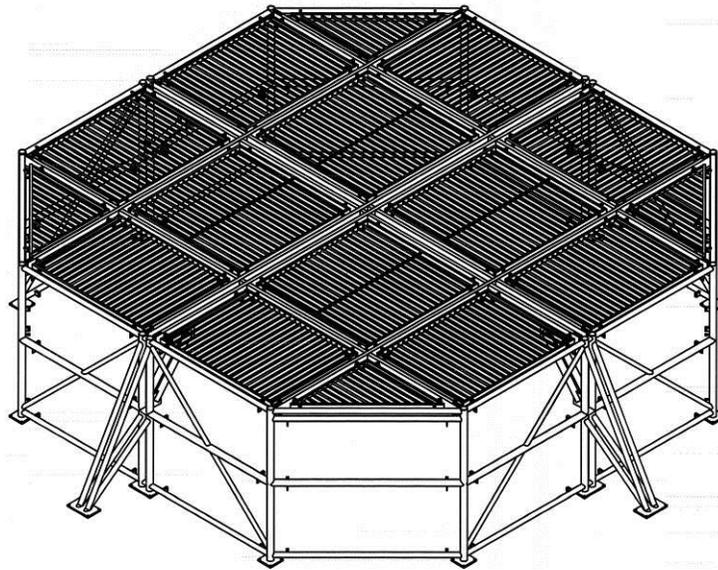
25

26 **2.4.4 The Stainless Steel Structural Frame**

27

28 The structural frame is designed to be constructed of welded stainless steel pipes
29 (primarily 6- and 8-inch-diameter schedule 80 pipe) for the vertical and horizontal posts
30 (i.e., bottom and roof circumferences), and stainless steel deep rectangular tubes (14

1 inches by 5 inches by 1¼ inches) as the main roof supports. The frame also includes a
 2 number of other structural supports (variously sized stainless steel pipes and plates) to
 3 increase the structure's overall strength, and ability to resist lateral shifting. The
 4 structural frame would be welded together onshore to create the final LOED structure,
 5 which would be transported to the Project site, lowered into place via barge crane, and
 6 bolted to the foundation panels, as depicted in Figure 2.4-6.
 7



ISOMETRIC
 (SIDE PANELS NOT SHOWN)

8
 9 **Figure 2.4-6. LOED Structural Frame (Barrier Bar Panels**
 10 **Shown on Roof of the LOED)**

11 *(Source: Adapted from Enercon 2012)*
 12

13 2.4.5 Barrier Bar Panels

14
 15 The barrier bars are designed as ½-inch by 3-inch stainless steel Type 2507 flat plate
 16 bars. Per OTC policy requirements, the bars are spaced 9 inches apart on center. This
 17 spacing allows suitable flows into the POIS while preventing large marine organisms
 18 from passing through. The bars would be prefabricated off-site into framed panels that
 19 would be bolted to steel plates welded to the LOED structural frame. The frame of each
 20 panel is designed with rectangular stainless steel tubes. The panels are designed to
 21 attach onto the structural frame with shear pins to allow “blow out” in extreme wave
 22 conditions to prevent damage to the foundation and frame.
 23

24 A diver access would be designed into one special bottom side panel that consists of
 25 four barrier bars that are bolted to the frame, and that may be unbolted to provide
 26 access for POIS maintenance and inspection.
 27

2.4.6 Sediment Dredging

Prior to LOED installation, sediments that have accumulated on the top of the stone blanket would most likely be removed via hydraulic dredging to prepare the benthic surface for proper and permanent installation of the LOED foundation (i.e., tremie grout and anchor footings). Natural sediment deposition around each POIS currently averages 21 inches in depth and is composed of sands and gravel. These accumulated sediments would be removed from the stone blanket, and sidecast to the surrounding seafloor along the perimeter of the stone blanket. The seafloor immediately below each POIS and adjacent to each respective rock blanket is unvegetated and appears to have similar sediment composition based on recent (August 2012) underwater video inspection files.

Within a Work Plan to be developed by the selected installation contractor, dredging methodology would require dredged sediments to be sidecast within the 140-foot by 140-foot CSLC easements that encompass each POIS, along the 40-foot easement around each of the discharge conduits seaward from the POIS, and, if necessary, on the 70-foot-wide easement over the intake and outtake conduits landward from the POIS. Table 2.4-3 shows the estimated volumes of dredged sediment for the Project.

**Table 2.4-3
Estimated Volume of Sediment to be Dredged**

Area of Stone Blanket/POIS	Stone Blanket Area Total (both Units)	Average Depth of Sediment	Volume Dredged (each POIS)	Volume Dredged (both Units)
6,964 ft ²	13,928 ft ²	1.75 ft	12,187 ft ³ (451 yd ³)	24,374ft ³ (902 yd ³)

(Source: Adapted from SCE 2012)

Sediment dredging and other construction-related activities associated with the installation of the LOED would be expected to cause temporary increases in water column turbidity in the immediate vicinity of each POIS. To minimize impacts from turbidity, a Turbidity Monitoring Plan (to be approved by the RWQCB and other responsible agencies) would be implemented to monitor vertical and horizontal water clarity during dredging and construction activities associated with the Project. The monitoring plan would continually evaluate construction-related turbidity relative to natural (background) turbidity occurring in unaffected areas during dredging and construction activities.

The Turbidity Monitoring Plan would require a qualified observer to record turbidity from a suitable vantage point during each day of dredging and construction. A daily log of

1 turbidity conditions throughout all dredging and construction activities would be
2 maintained. This log would include such information as:

- 3 • Observer's name, company, and professional title;
- 4 • Monitoring date;
- 5 • General construction activities description
- 6 • Prevailing environmental conditions (e.g., sea state, wind, cloud cover, secchi
7 disc depth); and
- 8 • Presence of plume (if present) and areal coordinates of surface extent.

9
10 The monitoring log would be available for review by the RWQCB upon request, and
11 would be accompanied by photo-documentation of daily dredging and construction
12 activities taken from fixed observation points determined before dredging or
13 construction activities commence.

14
15 The Turbidity Monitoring Plan would also specify adaptive management activities and/or
16 corrective action should monitoring indicate unacceptable turbidity levels above ambient
17 conditions. Routine reporting requirements would also be specified for providing
18 turbidity data records to the San Diego RWQCB, as well as other pertinent resource
19 agencies.

20 21 **2.4.7 Construction Plan and Schedule**

22
23 Each LOED would be prefabricated in sections at a land-based, off-site facility and
24 transported to either the Port of Los Angeles, the Port of Long Beach, or the Port of San
25 Diego where the individual LOED components would be assembled and loaded onto a
26 barge for shipboard delivery to the SONGS POIS locations. The specific port to be used
27 will be determined by the Contractor. However, because the Port of Los Angeles is the
28 farthest from the Project site, for purposes of the environmental analysis, the remainder
29 of this document assumes the Port of Los Angeles will be used. Once onsite and the
30 preparation of the foundations is completed, a barge crane would lift, lower, and position
31 the LOEDs for final installation underwater.

32
33 Three tugboats/barges would be used to mobilize the LOED and ancillary
34 materials/equipment to the POIS locations. One tugboat would remain at the Project site
35 for both Units 2 and 3 LOED installations, while the other two would return to the port
36 and head back to the Project site for the demobilization efforts once installation is
37 complete.

38

1 Construction activities would occur over approximately 6 weeks for each LOED
2 installation as follows:

- 3 • 1 week for mobilization;
- 4 • 2 weeks for site preparation (3 days for setup, 3 days dredging, 4 days anchoring
5 precast footing);
- 6 • 1 week tremie grout filling and curing;
- 7 • 1 week LOED assembly; and
- 8 • 1 week demobilization.

9
10 LOED construction is anticipated to begin during the 2012 to 2013 winter season. One
11 LOED would be installed then, when plant conditions allow, the other LOED would be
12 installed at the earliest available opportunity. This equates to approximately 12 weeks of
13 actual construction time for both Units 2 and 3. The construction schedule may exceed
14 three months in duration because the schedule would be driven by plant operational
15 requirements (e.g., outage schedules) and constraints (SCE 2012). In addition, because
16 marine construction can be restricted by inclement field conditions, the construction
17 schedule may be adjusted to avoid environmental impact and safety concerns due to
18 winter storms and/or rough seas.

19

20 **2.4.8 Operations and Maintenance**

21

22 The LOED will be constructed of stainless steel for corrosion and marine biofouling
23 resistance. However, based on similar installations of LOED structures in California,
24 maintenance cleaning of the LOED would likely be required. An 18-month cleaning
25 frequency is a reasonable assumption. For the purposes of the environmental analysis,
26 an 18-month cleaning frequency is assumed for the remainder of this document.
27 However, the inspection and cleaning schedule would be adapted accordingly based on
28 the first two years of observations and required cleaning needs. During underwater
29 maintenance inspections, LOED foundations would also be inspected for foundation
30 scour. Although this is not anticipated, the area around the foundations would be
31 monitored for signs of undermining.

32

33 Underwater cleaning of the LOED would be expected to involve (1) manual removal
34 (hand scraping), and (2) water jet hydroblasting. Both methods are similar to those
35 currently used for each intake velocity cap cleaning maintenance. The manual cleaning
36 method would require a team of divers to remove kelp and other debris buildup with
37 hand-scraping tools. The removed debris would be allowed to pass through to the
38 onshore intake structure for capture by the traveling bars and screens inside the
39 structure. While this method requires little ancillary equipment, it is time-consuming and
40 can lead to prolonged turbidity from dislodged organic material. The hydroblasting

1 method includes high-pressure water jetting equipment used by divers to efficiently
2 clean marine growth and foreign material from the LOEDs. Debris loading at the
3 traveling bars and screens would be evaluated prior to jetting to avoid excessive buildup
4 on the screening devices that would cause an unacceptable drop in cooling water
5 circulation.

6
7 During hydroblasting maintenance, a boat-mounted jet pump would provide the high-
8 pressure water spray for divers to manipulate. Although hydroblasting would be
9 scheduled for regular cleaning intervals, emergency manual cleaning may be required
10 depending upon logistics and the severity of the emergency. Cleaning from the outside
11 of the LOED could occur with the units online; however, full hydroblasting inside and
12 outside of the LOED would be scheduled during unit outages if needed. Alternatively,
13 barrier bar panels would be removable to facilitate complete cleaning onshore if a spare
14 set were available and panels were exchanged during maintenance outages.

15
16 Installation of the LOED would not impair the current maintenance and cleaning
17 practices for the POIS velocity cap, because its barrier panels would be designed to be
18 removable while providing a diver access location that would not require a hoist or other
19 lifting mechanism.

20
21 Other safety-related maintenance measures anticipated would include general diver-
22 protection practices that are currently employed for POIS velocity cap maintenance
23 cleaning, which limit maximum LOED flow-through velocity to 2.0 feet per second or
24 less while the units are online for inside cleaning.