2.0 PROJECT DESCRIPTION

2.0 PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The proposed project site is located in the coastal region of central California in the northwestern portion of San Luis Obispo County, within the community of Cambria (refer to Exhibit 1, REGIONAL VICINITY). Cambria is located approximately 35 miles northwest of the City of San Luis Obispo and 25 west of the City of Paso Robles. The proposed Desalination Plant is to be located in the vicinity if the CCSD's Effluent Disposal Ponds, San Simeon State Park and San Simeon State Beach.

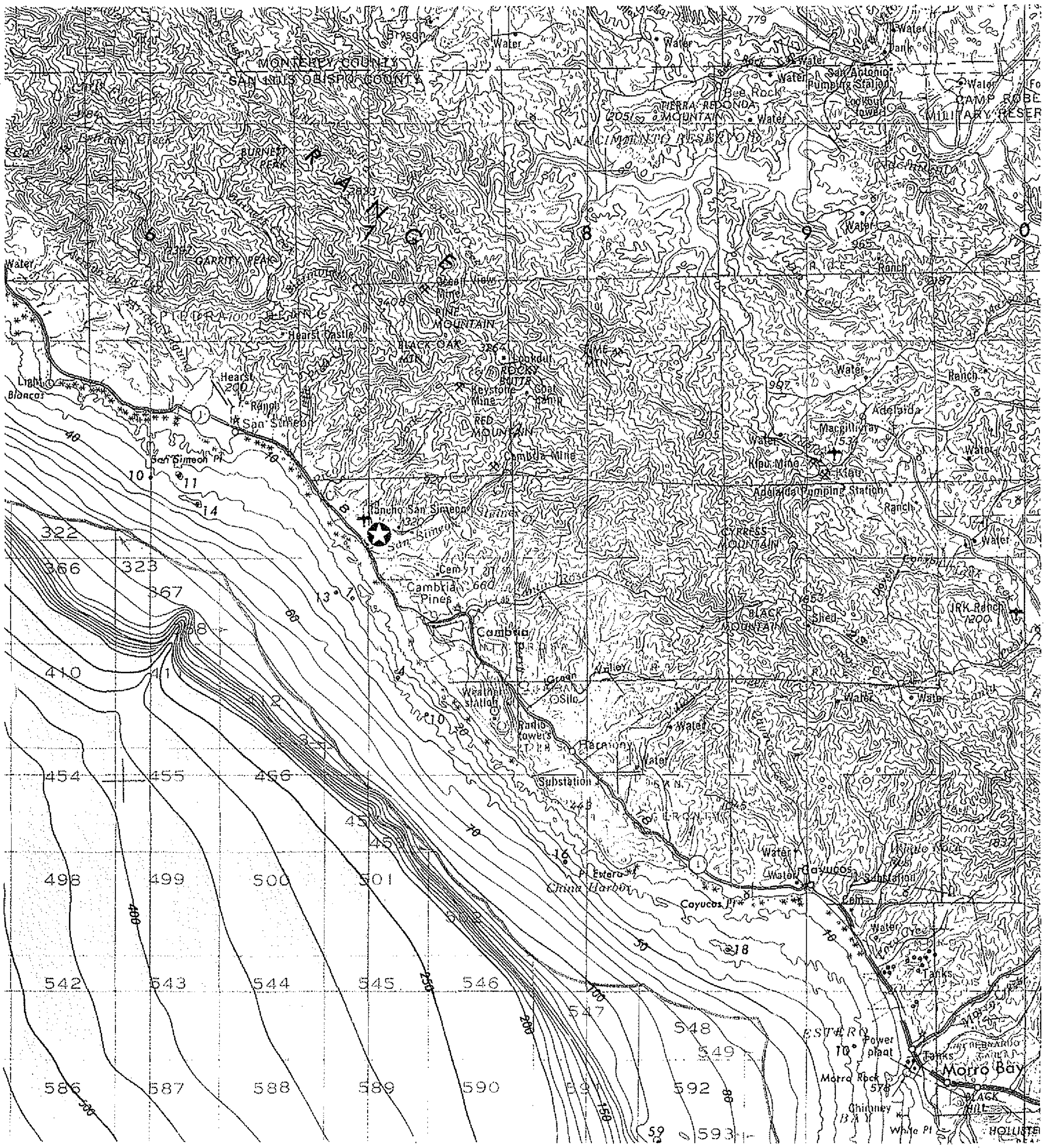
The facility would withdraw water directly from the ocean using an intake piping system. Water would be fed to a plant located on District property adjacent to the north side of the effluent disposal ponds. Brine reject water would be routed back to the ocean through a parallel pipeline and discharged into an ocean outfall.

The intake discharge pipeline would be located along San Simeon Creek Road, and traverse a vacant parcel (013-051-016) to the beach area. The parcel is an area inaccessible to the public, north of the State Beach property. Locating intake and discharge pipes on private property allows the District increased flexibility to accommodate both technical and environmental considerations.

2.2 OVERVIEW OF PROJECT AND REFINEMENTS

Overview Summary

The Cambria Community Services District (CCSD) proposes to construct a desalination facility to provide a source of drinking water to the community. Table 1 provides a breakdown comparison of the project description contained in the Final EIR with the refined description contained in this Addendum. As is stated in both the Final EIR and this Addendum, the project is designed to provide 1.008 million gallons per day (mgd) for the CCSD's projected demands. Additional capacity is provided for the San Simeon Community Services District (SSCSD) of approximately 0.144 mgd, for a total production capability of 1.15 mgd. The CCSD has completed and certified the CEQA documentation for the primary intake, discharge and processing facilities. The participation of the SSCSD requires that SSCSD perform their own CEQA documentation and permitting requirements for their facilities.



Source: USGS San Luis Obispo 250,000
Series Topography (1979)

Project Site

0 4 miles

CAMBRIA DESALINATION FACILITY

Regional Vicinity Map

Exhibit 1

Robert Bein, William Frost & Associates

7-94 JN 30175-4322

Table 1

DESALINATION PROJECT DESCRIPTION COMPARISON

	Final EIR	**Addendum**
Capacity	1.008 MGD	1.15 MGD
Pipeline (Caisson to Desalination Plant)	Intake: 12 inch Brine: 8 inch	12 inch 12 inch
Bluff Caisson	Depth: 65 feet Diameter: 16 feet	Depth: 80 feet Diameter: 6 feet
Drilling Technique	Micro-tunneling	Directional Drilling
Intake Pipeline	12 inch 1 pipe	10 inch 2 pipes
Brine Pipeline	8 inch	10 inch
Annulus Pipeline (Housing Intake and Brine pipelines)	24 inch	30 inch
Diffuser Section	10 diffuser ports	21 diffuser ports
Intake Excavation	Clam shell trenching and Backfill	Clam shell trenching and 230 cubic yards of soil excavated and transported to shore
Intake Facility	Infiltration Gallery and Off-shore Caisson Buried Perforated Pipe - 900 linear feet	Two Concrete Base 8' x 8' Cylindrical Intake Screens (approximately 8 feet above sea floor)

Plant capacity will be limited to 1.008 mgd, which meets CCSD's water requirements, until the SSCSD completes its processing requirements. The plant would not be operated above 1.008 mgd until these requirements were met. The impacts of additional capacity as it effects the RO plant facilities and SSCSD's participation are included in the Final EIR as a project alternative.

The Final EIR also provides a preliminary review of an operating scenario of 1.2 MGD beginning on page 15-69 of the Final EIR. The discussion states the following:

> "Increasing the capacity to 1.2 MGD would require an increase in the ID of the conductor pipe from 13 inches to 14.5 inches (from 16 inch to 18 inch OD assuming 160 PSI HDPE pipe). This increase would not effect the size of the microtunnel casing. To increase the capacity of the well screens for 1.2 MGD, their length must be increased even if larger diameter screen is used. Due to backwash and maintenance considerations, a three-leg configuration is recommended as it minimizes the length of the legs.
>
> A range of trade off scenarios exists. For instance, increasing the ID of the conductor pipe decreases the head loss which would allow shorter screens. These trades can be considered once the minimum required bluff micro-tunnel casing diameter is known. Because this type of parameter will not be known until the detailed design phase, the various scenarios were not calculated. Increasing the capacity of brine outfall from 1.5 MGD to 1.8 MGD (20 percent increase) was found to have no effect on the brine pipeline from the bluff to the diffuser. The original concept of a 12-inch pipeline is still valid with this increase.
>
> Additional length of outfall pipe, a change in the diffuser design, or an increase in the size of the discharge pipe may be required to compensate for additional brine discharge volumes. From a construction impact standpoint, additional outfall pipe (assumed to be 20 percent longer, or approximately 40 feet) would not significantly affect any sand bottom resources or nearby kelp beds (Class III, less than significant impact). The bottom habitat, as identified by pre-construction side-scan sonar surveys and diver transect surveys (see Appendix F, Final EIR), consists of a low diversity sand bottom community composed of approximately seven species of invertebrates dominated by ornate tube worms (*Diopatra ornata*), hermit crabs (*Isocheles pilosus*), and highly variable densities of sand dollars (*Dendraster excentricus*). There are no reefs or other

sensitive resources within the area within an additional 50 feet of outfall pipe. Operationally, the impact of the increased volume of discharge could be mitigated to acceptable discharge standards anticipated at 103 percent of the ambient salinity by modifying the engineering design. Should it appear that the outfall pipe, with the additional discharge volume might impinge upon coast kelp beds due to potential current reversals then the location of the outfall could be adjusted to a more center-line position in the sand channel.

The construction of a longer infiltration gallery (assumed to be approximately 20 percent longer) would not affect sensitive or unique marine resources in the area. The area consists of sand bottom habitat and associated organisms. Microtunneling techniques would avoid any short or long-term impacts to bottom resources or water column fishes. If microtunneling is not feasible, then additional trenching would result in some short-term loss of sand bottom dwelling invertebrates in the area of trenching. Larvae of affected invertebrates would recolonize the bottom habitat following the completion of the trenching process. No long-term effects on the sand bottom benthic community or water column organisms are expected as a result of additional trenching of the sand bottom habitat."

The Final EIR discussion concludes on page 15-70 that further environmental review will be required to address the participation of San Simeon. The SSCSD will be circulating a Draft Mitigated Negative Declaration/Initial Study for public review regarding the Alternative to transport water from the Cambria Desalination Plant to the SSCSD. The report is Incorporated by Reference into this Addendum and will be available for review at the SSCSD offices. The Initial Study concludes that there are no significant impacts associated with the proposed pipeline to San Simeon.

As stated in the certified Final EIR, the on-shore Cambria Desalination Facility, which will produce potable water, is planned to be constructed in three phases. Each phase is anticipated to be online in approximate ten-year increments. Tables 2 and 3 provides a breakdown of the amount of intake water, brine discharge and potable water necessary for each phase.

The overall project site is shown on Exhibit 2, Project Schematic. The off-shore feedwater and brine discharge facilities are located approximately 2,000 feet, along the pipeline alignment, offshore of San Simeon Creek. This is consistent with the Final EIR project description. The feedwater intake structure, as shown on Exhibit 3, consists of concrete bases supporting two

Table 2

OPERATIONAL QUANTITIES IN GALLONS PER MINUTE
(million gallons per day)

	Intake Water	Brine Discharge	Potable Water
Phase I	750 (1.08)	450 (0.65)	300 (0.43)
Phase II	1,375 (1.98)	825 (1.19)	550 (0.79)
Phase III	2,000 (2.88)	1,200 (1.73)	800 (1.15)

Table 3

ANALYSIS OF POTABLE WATER CAPACITY PER PHASE
FOR CCSD AND SSCSD
gallons per minute

	Phase I	Phase II	Phase III
Incremental Capacity Increase per District per Phase:			
Cambria CSD	200	250	250
San Simeon CSD	100	0	0
Additional Capacity per Phase:	300	250	250
Cumulative Capacity per District per Phase:			
Cambria CSD	200	450	700
San Simeon CSD	100	100	100
Overall Facility Capacity	300	550	800

cylindrical intake screens. The brine discharge structure consists of 100 feet of sealed pipeline followed by an additional 100 feet of diffuser section supporting approximately 21 diffuser jets.

The offshore direct intake structure is connected to an on-shore bluff caisson, as shown on Exhibit 4, Bluff Caisson Profile, with two 10 inch pipes which are contained in an underground tunnel. The same tunnel pipe will house a separate 10 inch line to carry the brine discharge water from shore to the diffuser section. With the exception of the intake structure and diffuser pipe, all of the facilities are constructed beneath the surface of the ocean floor using directional drilling techniques, thus eliminating any disturbance to the ocean floor and sensitive biological habitat.

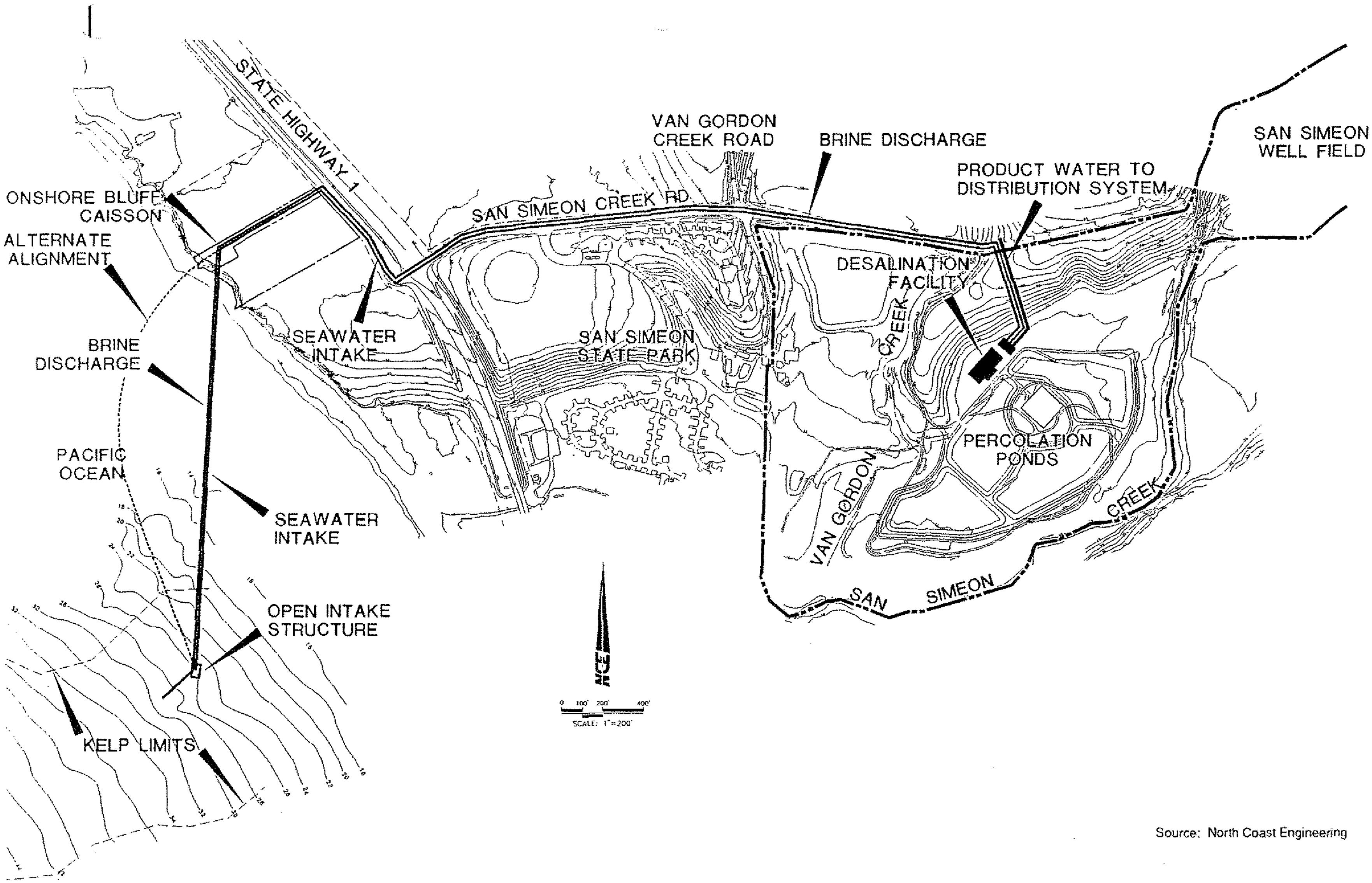
The onshore bluff caisson serves as the terminus for the off-shore and on-shore pipelines. It also functions as a pumping station transporting seawater approximately 4,800 feet inland to the desalination plant. The bluff caisson will be semi-automated and buried, thus reducing its physical and visual impacts on the bluff.

The piping from the bluff caisson to the desalting plant consists of two 12" diameter pipes, one for intake water, one for brine reject water. The pipeline will primarily follow road right-of-way to minimize disturbance to vegetation.

The desalination building will be a pre-manufactured structure designed to be consistent with the agricultural barn structures found in the Cambria area. The desalination equipment, consisting of filters, membranes, pumps, piping and controls, will be completely housed in a single unit. A separate building will be constructed of complimentary architectural style to provide disinfection and storage of the potable water produced by the plant. The potable water will be plumbed into one of the District's main transmission lines.

Construction Techniques

The following is a description of the off-shore facilities, i.e., bluff caisson, subsurface piping tunnel, feedwater intake structure and brine discharge diffuser section and the proposed construction techniques employed for their installation.



Source: North Coast Engineering

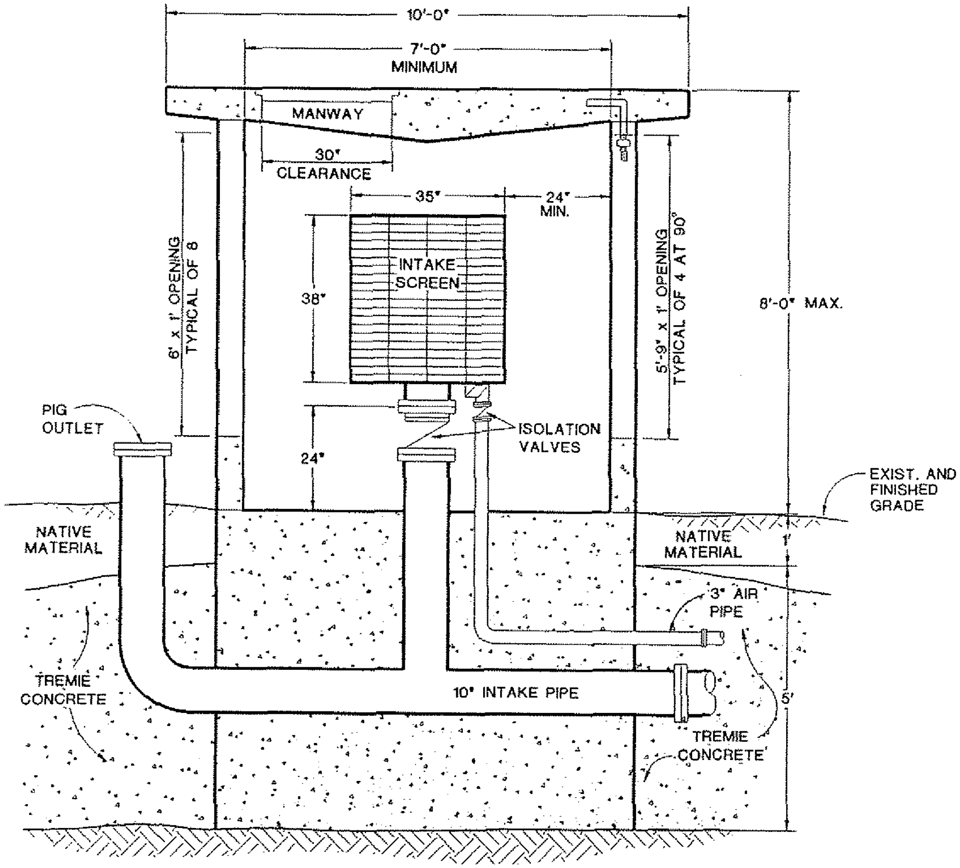
CAMBRIA DESALINATION FACILITY

Project Schematic

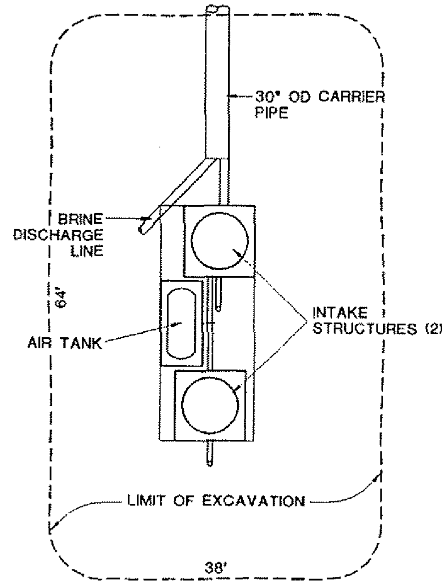
Robert Bein, William Frost & Associates

8-95 JN 32087

Exhibit 2

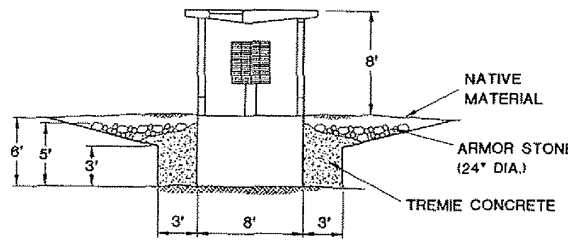


PROFILE



PLAN

SCALE: 1"-6'



CROSS SECTION

Source: North Coast Engineering

Not to scale.

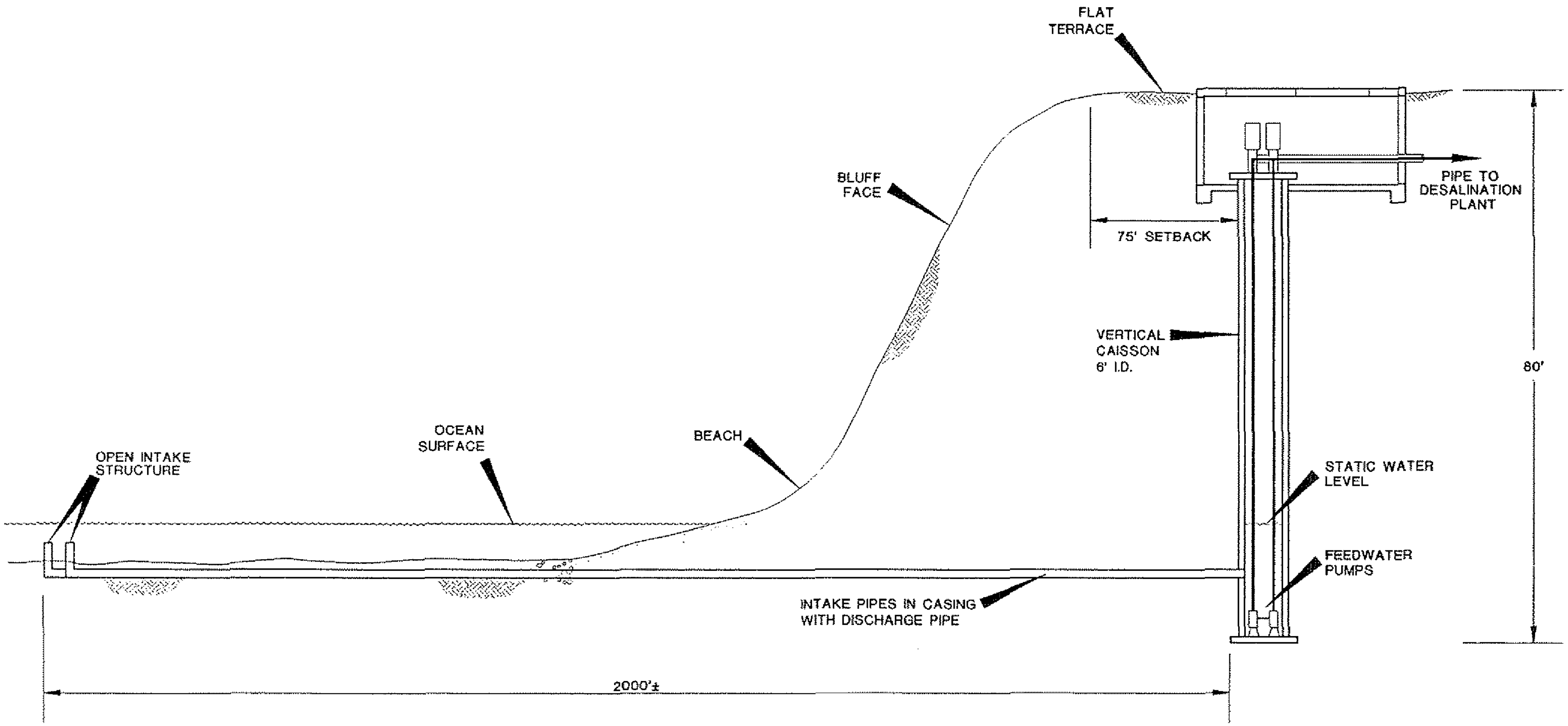
CAMBRIA DESALINATION FACILITY

Feedwater Intake Structure

Robert Bein, William Frost & Associates

8-95 JN 32087

Exhibit 3



PROFILE

Source: North Coast Engineering

Not to scale.

CAMBRIA DESALINATION FACILITY

Bluff Caisson Profile

Robert Bein, William Frost & Associates

8-95 JN 32087

Exhibit 4

Bluff Caisson

Located on a small flag lot, set back approximately 75 feet from the edge of the bluff, a minimum six-foot diameter on-shore bluff caisson will be constructed. This structure will serve primarily as the onshore terminus for the offshore to onshore pumping stations and as a feedwater pump station. The caisson will be drilled to a depth of approximately 80 feet by an auger-type drill and approximately 388 cubic yards of earth material will be removed from the bluff caisson construction. The concrete lined shaft will be fitted with the intake and discharge pipes and associated equipment. Once the necessary piping is installed at the bottom of the shaft, it will be backfilled with gravel to within approximately 10 feet of the ground surface. Sitting on top of the shaft, just below ground level, an equipment and control area will be constructed. Access to this below ground area will be by a small access hatch. It is anticipated that construction of the bluff caisson will require approximately 55 days.

Off-shore to On-shore Tunnel

The offshore to onshore pipelines serve to transport: 1) raw seawater from the intake screens to the bluff caisson transfer pipes; 2) brine concentrate from the bluff caisson to the diffuser; and 3) air from the bluff caisson compressor to the offshore accumulator.

A tunnel will be drilled from the bluff caisson to the offshore intake and discharge facilities to house both feedwater and brine reject pipelines. Two 10-inch feedwater pipeline and a single 10-inch brine reject water pipeline will be located in a minimum 30-inch (outer diameter) pipeline casing for protection (also referred to as an annulus pipeline). Both the casing pipe and the main transport pipes will be constructed of non-toxic, non-corrosive plastic piping.

The 30-inch minimum casing for the off-shore to on-shore pipes will be installed using the horizontal directional drilling (HDD) process. Horizontal directional drilling allows the drill rig operator located on shore to control the horizontal and vertical alignment of the drilling head to bore a tunnel under the ocean floor. Duration of the drilling will be approximately 30 days.

The tunnel will be aligned in a straight line, connecting the on-shore caisson to the off-shore facilities. Once the tunnel is bored to the proper size, the casing pipe along with the three main internal pipes are pulled into the hole from an off-shore derrick barge. The pipelines will be connected to the bluff caisson. From the caisson, at a diagonal distance of approximately 2,000 feet, the tunnel will curve upward and daylight through the sea floor sediments. At this location, the intake and discharge junction structure will be constructed.

Intake Structure

The intake structure will consist of a system of two intake screens, a pre-cast concrete base for each screen (approximately 8' x 8' x 6') connecting pipelines and a screen backwash air accumulator and piping. The intake structure will also include their ancillary components, such as valves and a clearing port. The height of the intake structure will be approximately eight feet. The base of the structure will be located in approximately 25 to 30 feet of water.

The intake screens will serve as the first level of raw seawater infiltration and prevent entrainment of macrobiota. The design intake velocity of 0.2 ft/sec is comparable to ambient ocean currents in the area. The screen will exclude from the flows any debris, fish, large indigenous invertebrates or drift algae which is 1/8-inch in size or greater from entering the intake pipes. The screens will be cylindrical in shape, approximately 36" in diameter and 38" high. They will be covered by a protective concrete structure to prevent large objects and sunlight from contact with the screens.

The concrete base structures will be pre-manufactured on shore and barged to the site. To resist wave, current and sediment transport forces, the base must be buried into the bottom sediments approximately six feet and be constructed of a weight and size to insure stability during turbulent ocean conditions. Excavation will consist of approximately 230 yards for the precast structure and excavation necessary for laying back slopes adjacent to the precast structure. The 230 cubic yards of marine sediment will be excavated and transported to shore for disposal in accordance with regulatory requirements. To secure the foundation and reduce the potential for scour, the over-excavated area adjoining the base will be backfilled with approximately 100 cubic yards of concrete. The concrete backfill will be poured to an elevation lower than the precast section, so that native backfill can be used to re-establish exiting ground contours and bottom conditions adjacent to the structure. The design engineer may require driven concrete piles to support the precast structure. It is estimated that installation of the intake structure will require approximately 20 days. During this time, the derrick barge will remain anchored in one location and divers will monitor the placement of all anchors.

The screen air backwash system consists of small diameter feedlines and an on-shore air pump. This system will be installed to pump air into the cylinder and back through the screen to dislodge any accumulated debris.

Brine Discharge Diffuser System

The primary function of the outfall and its diffuser is to transport the brine away from the intake structure and diffuse it into the surrounding seawater. The brine discharge line rises to the ocean bottom at the intake structure. At this point, a sealed pipe, which has been lowered to the ocean floor using "fluidization techniques," exits that intake structure for a distance of approximately 100 feet. Optionally, the sealed pipe may be anchored on the ocean floor in the same manner as the diffuser section. The diffuser section will rise to the seafloor at the end of the sealed pipe and continue for an additional 100 feet.

Diffusion will be carried out a ratio of 26 parts ambient sea water to 1 part brine. The mixture results in a saltwater concentration of 3% above ambient seawater. Studies have shown this level of salt to be within the naturally occurring concentrations of seawater caused by natural conditions. The desired dilution ratio at full facility capacity discharge flow (1.75 mgd) will be achieved with a diffuser having 21 ports over its 100 foot length. The diffuser will be constructed of plastic pipe with each port having a 1.5 inch diameter by 1 foot long riser placed at alternating 45 degree angles.

Installation of the diffuser and connection pipeline will be achieved from a derrick barge with diver support. Approximately 50-foot pipeline sections, prefitted with required valves, etc. will be lowered from the barge then guided by divers into position and connection with the onshore/offshore pipeline. It is estimated that installation of the outfall will require three days.