Monterey Bay Aquarium Research Institute
General Development Plan (File # PLN080006)
Revised March 2015

MBARI

The Monterey Bay Aquarium Research Institute Master Plan (MBARI) contains both short- and long-term plans for expansion, which are outlined below.

PROJECT LOCATION

Moss Landing

APNs/Addresses

1. APN 133-252-001-000
2. APN 133-242-001-000
3. APN 133-242-008-000
4. APN 133-232-001-000
5. APN 133-231-001-000

OVERVIEW

The MBARI General Development Plan calls for 76,791 square feet of net new structures, including a 900 square-foot dock extension, and for the demolition of an existing 20,609 square-foot structure. MBARI has identified several short-term and long-term development projects in its proposed master plan. MBARI has proposed phased development of these facilities over a 35-year timeframe. In the event of inconsistent information on building size presented in the MBARI Master Plan, the EIR has assumed the building area presented below. The following improvements are proposed (presented here in order from north to south and phasing):

- **Building J.1: Expedition Staging Facility and Research Laboratory.** A 5,800 square-foot expedition staging facility would be constructed to build and assemble equipment prior to mobilizing research projects. No additional staff is associated with this staging facility. This building is to be located on the MBARI site APN 133-252-001.

- **Parking H.1:** An auxiliary 95-space parking lot is proposed to support the master-planned campus facilities and provide visitor parking for the beach access when available off-hours (evening/weekend). The parking facilities are proposed on MBARI sites APN 133-252-001 and APN 133-242-008; Phase II (2017-2020).

- **Building G: Oceanographic Research/Test & Integration Facility.** A 30,000 square-foot, two-story building is proposed as a replacement for the existing 20,609 square-foot, two-story building that currently houses Phil's Fish Market, Restaurant, and Fish Processing (13,959 square feet) and MBARI facilities (6,650 square feet) at 7600 Sandholdt Road. This building would support research centers and activities associated

with integration and testing of oceanographic equipment prior to deployment on research vessels. This building is proposed to be constructed on approximately the same footprint as the existing building but would not extend as far to the west at the southwest corner. Twenty parking spaces are proposed, and about forty (40) new staff members are anticipated. On-site parking would be supplemented as needed with additional available MBARI campus parking. This building would be located on the MBARI site APN 133-232-001; Phase II (2017-2020).

- **Dock Expansion F:** A 30-foot by 30-foot dock extension is proposed to accommodate future marine operations (a longer vessel to replace the current R/V *Western Flyer*).

- **Building H: Research Laboratory Office Facility.** A 24,000 square-foot, two-story building is proposed that would support ocean-dependent research activities. Forty new staff members are anticipated. This building would be located on the MBARI sites APN 133-242-008 and APN 133-242-001; Phase III (2030-2050).

- **Building J: Research Laboratory and Office Facility.** A 35,000 square-foot, two-story building for additional research lab space that would replace the 5,800 square foot expedition staging facility (J.1) at a later time. MBARI anticipates approximately sixty (60) new staff members associated with this laboratory building. These buildings would be located on the MBARI site APN 133-252-001, field expedition staging, Phase I (2015-2016); research lab, Phase III (2030-2050).

- **Building K: Dock House.** A new 7,500 square-foot dock house for marine operations staff would be constructed opposite 7600 Sandholdt Road. Thirteen parking spaces would be provided and 15 staff members are anticipated. These facilities would be located on the MBARI site APN 133-231-001; dock, Phase II (2015-2020); building Phase III (2030-2050).

MBARI GENERAL DEVELOPMENT PLAN

The following information has been included to fulfill the Zoning Ordinance Section, 20.26.060 requirement to prepare a General Development Plan for the Monterey Bay Aquarium Research Institute's (MBARI) operations in Moss Landing, California.

MBARI's operations fall under section Z, Light Industrial use in the Coastal Implementation Plan, Title 20, Zoning Ordinance for the County of Monterey, "Marine related research facilities including but not limited to laboratories, offices and other reasonable related uses."

MBARI Current Operations and Facilities

MBARI's principal research objective is to address ocean issues of global and societal relevance using Monterey Bay as a test bed. To enable this research MBARI scientists and engineers develop state-of-the-art platforms, sensors, and related systems in its engineering laboratories and manufacturing facility. MBARI's research scientists then use these new systems deployed off its dedicated research vessels operating out of Moss Landing Harbor across the street from its science, engineering, and operations facilities.

The knowledge gained and the technology developed are then transferred, typically at no cost, to communities outside of MBARI, that includes the general public, schools, other scientific and research establishments, policy makers, government laboratories, and resource managers.

MBARI has been operating out of Moss Landing since 1993. There are currently approximately 220 staff working at MBARI facilities and on the research vessels.

The success of MBARI lies in its ability to co-locate all its staff and operations on the same campus. This enables critical teaming between its research scientists, the engineering teams developing new instruments and systems for the scientists, and the marine operations group who deploy the new oceanographic systems in support of the research.

The location allows ready access to Monterey Bay and the deep Monterey Bay Canyon, and the mild year-round climate on the central coast allows all year around access to ocean and coastal research sites. Year around access is critical for understanding annual variations in the ever-changing coastal zone ecosystems. Several MBARI scientists have been taking measurements in Monterey Bay every month for the last 20 years. This sampling program has led to MBARI generating some of the most valuable oceanographic data ever taken anywhere in the world's oceans, and has been instrumental in understanding phenomena such as the EI Niño and La Niña and in deciphering the signal of climate change on top of the annual and decadal changes. This has been achieved by using new technologies developed by scientists and engineers, followed by deployments of these technologies by the scientists and marine operations staff on MBARI's research vessels. All this has only been possible by locating all of MBARI's staff in one campus on Moss Landing Island, close to its docks and research vessels.

Within the MBARI facilities in Moss Landing, several different types of inter-related activities occur including science research, engineering, marine operations, and education and outreach.

Science Research

MBARI has several research laboratories, each led by a research scientist or a research engineer. Current research areas include marine geology, marine chemistry, biogeochemistry, microbiology, molecular biology, benthic biology, mid-water biology, autonomous platforms, and distributed autonomy. It is anticipated that in the future, MBARI may move into new, rapidly developing areas of ocean research that are entirely impossible to anticipate today. As the very nature of research is unpredictable, it is clearly not possible to itemize here every future research activity. However, all of MBARI's research will focus on understanding basic ocean processes and the anthropogenic impact on these natural ocean processes, and to disseminate our discoveries to the benefit of the general public and policy makers. In the future, as new opportunities arise, MBARI may expand into new areas that are aligned to its mission and strategic plan. Those opportunities will undoubtedly involve developing instrumentation, sensors, and systems to further advance these new areas of oceanographic research.

Each of the science research laboratories has three to 10 staff supporting its research activities. The support staff in the laboratories undertakes basic research activities typically during normal day work hours and support sea-going research activities on the MBARI vessels several times

during the year. Because of the nature of research, staff may be working any hours of the day and night, and seven days a week at critical periods in their research or in preparing for upcoming ocean cruises, so there are no regular working hours that can be defined.

Engineering Development

MBARI's engineering division currently consists of engineers and technicians performing engineering, manufacturing, shore-based integration and test, and at-sea testing. Components are machined in the machine shop and fabricated (welding, cutting, etc.) in the manufacturing facilities. Assembly work is performed in assembly bays or in engineering laboratories depending on the size and complexity of the systems being developed. Cold room testing and pressure testing is performed in specialized test facilities at MBARI to ensure equipment will operate when deployed at ocean depths.

MBARI has a large salt water test tank with filtered sea water pumped to and from the Moss Landing Marine Laboratory pump house next door to Building A in a closed-loop system. This is a unique test facility that is open to other oceanographic users in the area, such as MLML, Naval Postgraduate School etc., for testing equipment before being deployed.

Marine Operations

The Marine Operations group prepares equipment and systems (buoys, autonomous underwater vehicles, gliders, drifters, etc.) for deploying off the research vessels. Most of this work is performed in large high bays and requires cranes and forklifts for moving systems between the assembly areas and the research vessels at the Moss Landing dock.

Some systems are deployed for periods of up to a year, after which they are recovered, refurbished, tested, and sent back to sea for another deployment. This work requires cleaning marine growth off equipment and involves use of cranes and forklifts.

The research vessels are in operation most of the year, but operate on different schedules. MBARI's flagship, the R/V *Western Flyer* is typically at sea for one–two week cruises, but occasionally will be away from home port on expeditions that last up to three months. Harbor dredging practices limit the vessel entry and leaving times to an hour or so either side of high tide, so the ship can arrive or leave port at any time during the day or night in order to catch the right tide. The other two research vessels, the R/V *Rachel Carson* and R/V *Paragon*, operate out of Moss Landing on a daily basis, typically during the daytime, but depending on their mission, could be arriving or leaving any time during the 24-hour day.

The Marine Operations division also operates the cabled observatory in Monterey Bay, known as MARS, currently the only deep water scientific cabled observatory off the United States West Coast.

Due to the nature of an oceanographic research, a great deal of equipment is stored both outside and inside storage bays waiting to be repaired or deployed on future science cruises.

Education and Outreach

Education and outreach activities are many and varied. Most weeks school groups will visit MBARI for a presentation and tour of the facilities. Each year MBARI holds a one-day open house that is free to the general public. MBARI holds several workshops each year to disseminate its discoveries for science teachers and other researchers from across the country. MBARI holds weekly seminars that are open to the public and allows other organizations and institutes to use its conference facilities for meetings when the work is connected with MBARI activities and research interests.

MBARI's Existing Facilities

MBARI has six existing buildings on Moss Landing Island, identified as Buildings A, B, C, D, F, and G, on APN #133-232-xxx, and on 133-231-xxx in the attached drawing (see Figure MBARI-1).

Building A was built in 1996 and provides space for most of the Institute's management and administrative staff, scientists, engineers, and education and outreach staff. The building includes offices, science and engineering laboratories, salt water labs, video laboratory, meeting rooms, and limited covered parking.

Building B was originally built in 1986 and had an extension added in 2001. The original building supported marine operations and included a manufacturing facility and a High Bay area. The new extension added in 2001 provided office space for engineering and science staff, several new science and engineering labs, conference rooms, and a large saltwater test tank that is used for testing instrumentation prior to being deployed in the ocean.

Building C provides storage for marine science equipment and includes a small wood shop.

Building D is used to house our cabled observatory support staff with office space and laboratories. They test equipment and experimental systems prior to being deployed on the cabled observatory, MARS, in Monterey Bay. The open High Bay area is used by Division of Marine Operations to store, assemble, and test equipment prior to marine deployments.

Building E is a dock house that provides storage for spares and equipment to support operation and maintenance of our research vessels.

“F” is the dock for the R/V *Western Flyer* on land leased from the Moss Landing Harbor District.

Building G houses Phil's Restaurant, Fish Market, and Fish Processing that is leased through 2017 from MBARI. Science video storage, low temperature freezers, and a small area for an engineering laboratory and offices are within the existing building.

MBARI Future Operations and Facilities

Currently Owned Property/Build Out

To enable MBARI to expand in the future, MBARI bought two properties on the Moss Landing Harbor on Sandholdt Road in early 2000. It is critical to the success of MBARI for all of its activities to be co-located as close as possible to maintain frequent and continuous interactions between the various divisions during the research, development, and deployment phases. Proximity to the research vessel docks is absolutely essential for the frequent deployments needed to test out new technologies and systems on a regular basis.

When opportunities arise and funding allows, MBARI will construct new research facilities on the vacant lots. The exact nature of the research and development activities is not currently known, as this is research, but it is most likely to be similar in nature to existing activities described under "Current Operations," and it will be in support of ocean research. The activities will be associated with a combination of science research laboratories, engineering research and development, machining, fabrication, assembly (indoor and outdoor), equipment maintenance and repair, equipment testing, education and outreach, workshops, and seminars.

These new buildings would be constructed on the Moss Landing Island in the area zoned "Light Industrial" in the Monterey County Land Use Plan. The science research activities enabled by the construction of these new buildings are considered coastally dependent.

MBARI holds title to several parcels/APNs on Moss Landing Island shown in Figures MBARI-1, MBARI-2, and MBARI-3. Several buildings are marked as existing (A, B, C, D, E, F, G) and are supporting MBARI activities; other properties (F, G, H, J, and K) are not yet developed but planned developments will enable critical expansion of MBARI research in future years. Note that Building G exists but will be demolished and replaced by a new research facility as part of Phase II.

Figures MBARI-1, MBARI-2, and MBARI-3 show the MBARI Master Plan with new development and timing of the three main phases of construction. Table MBARI-1 summarizes the MBARI development plans.

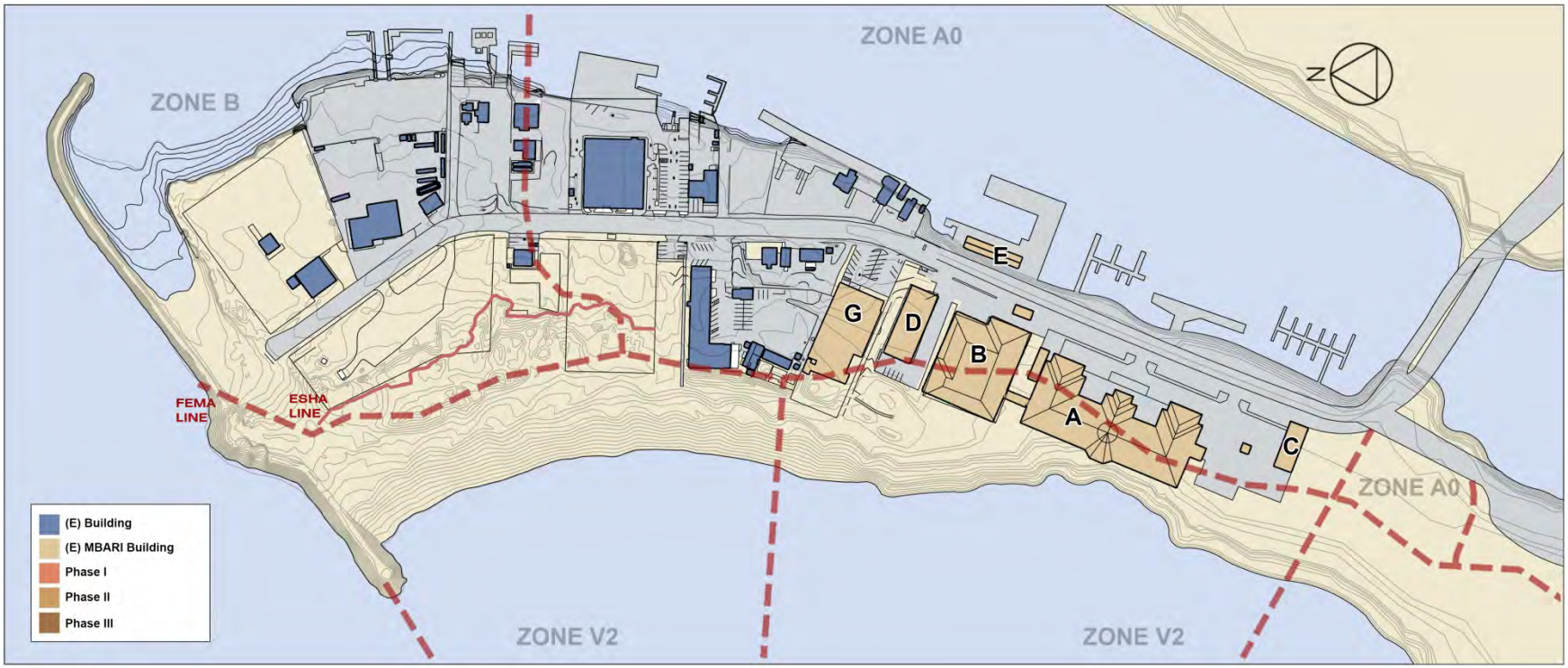

Figure MBARI-1. Site plan depicting MBARI's existing facilities.

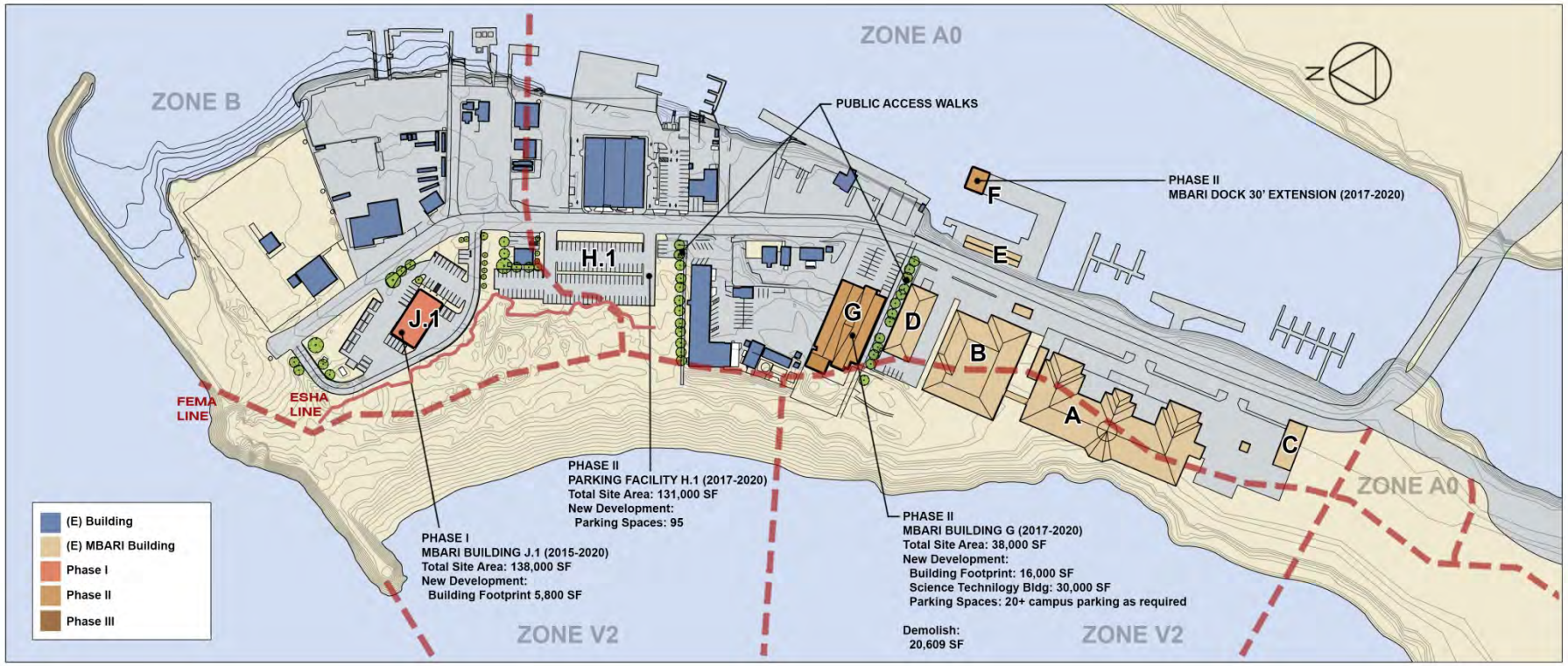

Figure MBARI-2. MBARI Master Plan depicting Phase I and Phase II development.

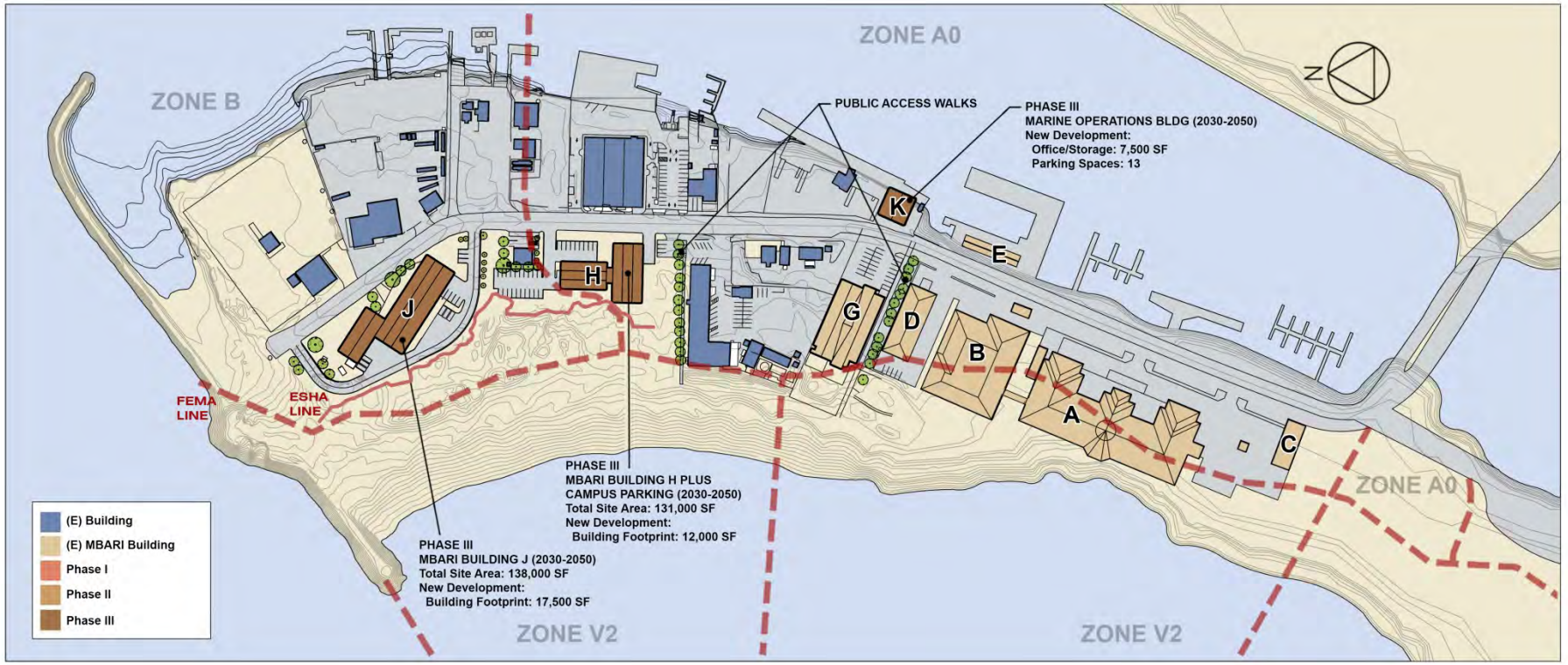

Figure MBARI-3. Phase III development of MBARI's Master Plan.

Table MBARI-1. Existing and Future MBARI Buildings

Bld #	Description	Assessor parcel number (APN)	Building Size (sq ft)	Building Footprint (sq ft)	Number of additional staff
Existing Facilities					
A	Existing	133-232-xxx	69,628		
B	Existing	133-232-xxx	45,344		
C	Existing	133-232-xxx	4,000		
D	Existing	133-232-xxx	7,837		
E	Existing	133-231-xxx	2,624		
G	Existing	133-232-xxx	20,609		
	Subtotal		150,042		
Phase I: 2015–2020					
J.1	Construct field program staging bay	133-252-001	5,800	5,800	0
Phase II: 2017–2020					
E	30-foot extension pier for new research vessel	133-231-010	900	900	0
G	Demolish existing Building G; build new research lab/offices	133-232-001	<20,609> 30,000	<16,000> 16,000	40
H.1	Parking Facility: 95 spaces	133-242-008 133-242-001	N/A	N/A	
Phase III: 2020–2050					
H	Replace parking lot with new research lab/offices	133-242-008, 133-242-001	24,000	12,000	40
J.1	Remove the existing field expedition staging building	133-252-001	<5,800>	<5,800>	
J	Replace field program staging building, new research lab/offices	133-252-001	35,000	17,500	60
K	New marine operations offices	133-231-001	7,500	7,500	15
Total					
	Net new development		76,791	37,900	155

Construction Phases and Timing of Future Developments

Table MBARI-1 shows existing MBARI buildings and the plan for development of the future facilities. Development will occur in three phases.

Phase I

Phase I, 2015−2020, includes:

- Construction of the Field Program Staging Building: a 5,800 square foot field program staging building will be constructed on APN 133-252-001 (Building J.1), and will be used to build and assemble equipment, including gliders, moorings, drifters, and autonomous underwater vehicles, prior to mobilizing for major Monterey Bay field programs.

Phase II

Phase II, 2017−2020, includes:

- Demolition of the existing Building G (that currently houses Phil's Fish Market) and the construction of a new 30,000 square foot research lab and offices (APN 133-232-001). The building is sited close to MBARI's existing properties and to our research vessels and docks. The new building will support an Integration and Test Facility with a cold room, research labs, offices, and conference rooms.

- Construction of a 95-space campus parking lot on APNs 133-242-008 and 133-242-001.

- Construction of a 30-foot dock extension on APN 133-231-010 to accommodate the greater length of the R/V *Western Flyer* replacement when the R/V *Western Flyer* reaches its end of life and is decommissioned.

Phase III

Phase III, 2030−2050, includes:

- Removal and replacement of the field expedition staging building (Building J.1) and the construction of a new 35,000 square foot research lab and offices on APN 133-252-001.

- Construction of a 24,000 square foot research lab and offices on APNs 133-242-008 and 133-242-001.

- Construction of a 7,500 square foot Marine Operations office (Building K) on APN 133-231-001.

- The new research buildings will provide laboratory space for research labs, offices, and meeting rooms. It is anticipated that over the next few decades new research themes will emerge that we cannot conceive of today, but will be important to society and to the health of the coastal oceans. Figures MBARI-1 and MBARI-2 show development plans for selected MBARI buildings.

Development Standards

Site Coverage

Building site coverage will meet the Monterey County requirements and will be significantly less than 50 percent (excluding parking and landscaping).

Building Design

The building exterior designs will convey the aesthetics of a working fishing port, consistent with the neighborhood on Sandholdt Road. Gabled or pitched roofs are preferred over flat roofs to fit in with the industrial warehouse or shed look of the road. Rugged, utilitarian, and industrial style exterior finishes capable of withstanding the harsh climate and blending into the neighborhood will be utilized. Exterior finishes will also be compatible with the existing MBARI buildings, in order to convey a consistent campus aesthetic. For example, in Building G, Hardiboard fiber cement lapped siding will be the predominant exterior wall finish, to be consistent with Buildings A and B. Preliminary conceptual drawings of Building G and Building J.1 are depicted in Figures MBARI-4 and MBARI-5.

Parking and Traffic

MBARI's new facilities will be provided with the parking required by Monterey County's standards. The campus master plan and interdependent facilities will possibly locate parking on associated sites to cluster facilities and make uses function efficiently. For example, 95 parking spaces are proposed as H.1 in Phase II and would serve the entire MBARI campus. Over time, parking standards and needs will be monitored and adjusted as appropriate with the implementation of the phasing of projects.

MBARI reduces traffic congestion and the need for on-site parking by providing five van pools and incentives for carpooling. MBARI also operates nine-hour days with an off Friday every other week, that helps reduce traffic on the off Fridays. Due to the longer work hours on the other nine days, commuting times are moved to outside the normal rush hour periods. In addition, due to the nature of the research, MBARI does not operate fixed working hours and may change the working schedules in the future depending on advice from staff and or direction from our Board of Directors.

Landscaping

MBARI will use low water native landscaping in locations where landscaping is required or desired. Landscaping will be designed to replicate or compliment the California native plant community in the region.

Setbacks and Building Footprint Locations

MBARI has limited the new buildings to areas that are identified as not being Environmentally Sensitive Habitat Area (ESHA) required by the California Coastal Commission and that are heavily disturbed areas and/or with hard compacted sand and gravel that are unsuitable for re-vegetation.

Buildings will be set back to meet zoning standards at the side property lines, and a minimum of five feet from the street front property line. Rear yards are normally controlled by ESHA.

Building Heights

Office and laboratory buildings will be limited to two levels. Building height will be influenced by the requirement for significant mechanical ductwork in the overhead space of research buildings, requiring floor to floor heights to be larger than they are for office or residential buildings. The pitched roof aesthetic incorporated to make the building fit the character of Moss Landing, and considerations of future sea level rise on the Finished Floor Elevation (FFE) will increase the building height over a flat-roofed building. It is expected that the buildings will not exceed 35 feet above average surrounding grade. The Finished Floor Elevation (FFE) will comply with FEMA flood zone requirements and county guidelines.

Coastal Access

No new coastal access is proposed as part of the MBARI General Development Plan. There are three existing points of coastal access on the Island. First, access is provided between Moss Landing Marine Lab's El Norte building and MBARI's proposed Building H. Second, coastal access is located on the south side of the existing Phil's Fish Market (MBARI's future Building G). Finally, coastal access is provided at the termination of Sandholdt Road. See Chapter 6.0 for a diagram showing existing coastal access points on the Island.

Coastal access will be supported with the designation of portions of the MBARI campus parking for off-hours weekend and evening use by public coastal users.

Figure MBARI-4. Early conceptual drawings of Building G.

Figure MBARI-5. Conceptual drawings of the Field Program Staging Building.