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CHALLENGED BY 2020 VHB RESPONDS WITH MEASURES TO SUPPORT STRONG INTERNAL CULTURE STANDARDS; EMBRACES NEW MARKET DEMANDS OF CLIMATE CHANGE

Founded in 1979 and headquartered in Watertown, Massachusetts, **VHB** is a company of 1,600 people across 32 offices in 13 states and Washington, DC. Gross revenue in 2020 was approximately \$295 million, recognized from transportation agencies, real estate and institutional clients, the energy sector, and federal, state, and local government sectors. Core services include transportation planning and engineering, land development, environmental services, planning and design, and technology.

VHB's diverse team brings together collective knowledge, technical excellence, and wide network of trusted relationships across our footprint to address clients' most complex challenges in light of the changing nature of our industry and the world in which we live and operate. VHB delivers value by embracing client goals, anticipating challenges, and building lasting partnerships. With a future-focused mindset, VHB works to deliver sustainable, equitable, and resilient solutions for our clients and communities.

Q&A participants include Mike McArdle, Chief Development Officer; Meredith Avery, Director of Natural Science; Ryan Prime, Sustainability Practice Leader; Lauren DeVoe, Senior Environmental Planner; Dave Mulholland, Chief Technology Officer; Kenneth E. Rodman, Jr., PE, Mid-Atlantic Real Estate Director; Robert Smedberg, Institutions Market Leader; Steve McElligott, Transportation Agencies Market Leader; Kris Dramby, CWB, PWS, CE, Energy Market Leader; Keri Kocur, Chief People Officer.

EBJ: How has business been for VHB over the past couple of years?

McArdle: While the COVID-19 pandemic proved a major disruptor in 2020, VHB's proactive Business Continuity Program prepared us to meet the resulting challenges. Technology investments made prior to COVID-19 allowed us to quickly pivot to a fully remote workforce and immediately support our client partners. Hosting virtual roundtable discussions with industry leaders, leveraging our thought leadership web site to provide COVID resources, and helping clients conduct more than 200 virtual meetings allowed VHB to stay connected with our clients and communities.

Companies the world over continue to navigate a shape-shifting pandemic and plan for what an eventual return to the workplace will look like. Collaboration is

one of VHB's core values and embedded in our culture. Over the past year and a half, as we had to move away from in-person collaboration, this core value guided us in shaping and advancing our remote work practices and technical capabilities. VHB formed a Workplace Evolution Team, leveraged data to inform decisions, and developed 10 Guiding Principles that will steer the company through the uncertainties of today and tomorrow.

Despite ongoing economic uncertainty in some markets, we project an increase in overall 2021 revenue, particularly with an increase of infrastructure spend and forthcoming projects stemming from the recent passing of the Infrastructure Investment and Jobs Act.

A recent example of client-focused success, VHB was awarded the Preliminary Engineering contract of the transforma-

tive Long Bridge project. VHB has been involved with this project from the beginning, leading the National Environmental Policy Act (NEPA) process, which resulted in the Record of Decision that allowed Long Bridge to advance. VHB also completed the Environmental Impact Statement (EIS) and conceptual design prior to beginning the PE phase. As the only railroad bridge connecting Virginia to Washington, DC, the expansion of Long Bridge will increase capacity, improve service reliability, increase connectivity, and improve mobility along this critical rail link.

A project that is nearing completion is the Ohio Creek Watershed Transformation in Norfolk, Virginia—one of the largest populations at risk for sea level rise in the U.S. Norfolk's Chesterfield Heights Historic District and Grandy Village neighborhoods frequently faced coastal flooding due to sea level rise and major rainfall events.

To address threats to Norfolk's resiliency, the City worked with VHB to develop coastal defense strategies, including earthen berms, tide gates, raised roads, floodwalls, and 2,000 linear feet of living shoreline that offsets necessary encroachments by creating more than four acres of tidal marsh and protects from future flooding. The City's Resiliency Strategy also included raising roadways to make them operational during heavy rainfall events, replacing old infrastructure to hold more rainfall, and designing multi-use trails and athletic fields to create a sense of community. Elements such as lighting, educational signage, and sidewalk improvements were also incorporated throughout the project to improve connectivity. The Ohio Creek Watershed project not only improved flooding, but the overall quality of life for the community through economic vitality, public health, safety, and expanded connectivity and accessibility.

Over the past five years (since January 2016), VHB expanded our team of professionals by 32 percent—and we continue to grow. In early 2021, we joined forces with Brinkerhoff Environmental Services, a 44-person environmental services firm with three offices in New Jersey. Together with BES, VHB is expanding the firm's services to meet market demands, providing enhanced capabilities for clients in the high-density New Jersey market, and delivering resilient and sustainable solutions that provide positive impact to clients and communities.

EBJ: What trends will define the Environmental Industry in 2022?

Avery: Climate change is an issue that will define not only the environmental industry, but all markets, services, and sectors in 2022 and beyond. Many clients across the country are planning for the future by developing and implementing Sustainability or Climate Action plans. Many are making commitments to decarbonization and clean energy—and they are partnering with VHB in taking action.

As part of the Nantucket Memorial Airport Capital Improvement Plan, VHB provides identification and protection methods for natural resources within the property boundaries to assist with future infrastructure improvements and programming. These efforts are interwoven with airport wide efforts to reduce carbon emissions; build affordable, energy-

efficient housing; address coastal erosion issues; and integrate future sustainability considerations.

The Rhode Island Department of Transportation, recognizing the need to address the impacts of crossing structures on stream connectivity and culvert impact on road safety and climate change, partnered with VHB to develop a set of design standards most applicable to the state's current and future road-stream crossing needs.

The team concentrated on providing standards which would provide hydraulic and ecologic resiliency, align to regional standards, and account for future climate change with flexible requirements that will adjust to new predictions. The final Road-Stream Crossing Design Manual represents a significant step towards creating guidance that will provide designers and engineers with road-stream crossing design criteria to help prevent habitat fragmentation of riverine ecosystems, improve stream crossing function, and provide long-term resilient infrastructure.

In Florida, VHB is working with Pinellas County leaders, staff, residents, and a diverse array of stakeholders on the development of their first Sustainability and Resiliency Action Plan (SRAP). This guiding document serves as a roadmap for future initiatives to support natural resources, provide resilient infrastructure, address

social equity, pursue renewable energy options, improve community health, and implement smart growth.

In St. Petersburg, the first city in Florida and the 20th in the U.S. to commit to becoming completely reliant on sustainable energy sources, VHB helped the city develop their Integrated Sustainability Action Plan (ISAP) as a blueprint for advancing the city's sustainability and resiliency goals. The ISAP establishes smart city goals and strategies for broad social, economic, and environmental sustainability with a focus on equity, livability, and resiliency. VHB's work was critical to St. Pete being a recipient of the American Cities Climate Challenge from Bloomberg Philanthropies, an award valued at \$2.5 million to further their climate change efforts.

The climate crisis is a significant challenge impacting markets and clients across VHB's footprint and will result in increasing urgency for investment in climate solutions. From rapid integration of renewable energy, to increased use of multimodal transport, to zero carbon buildings, the road to Net Zero will require collaboration and partnerships across industries, markets, and agencies.

EBJ: Tell us about your Climate Adaptation Planning Services. How have these evolved over the past couple of years? How are projects changing and what type of demand do you foresee for the next couple of years?

Prime: How we, as an industry, address climate change is top of mind for VHB and our clients. The built environment is responsible for a large portion of greenhouse gas emissions, from the energy expended to make the materials and construct assets, to the energy required for operations and maintenance. Reducing greenhouse gas emissions through these elements of a project has a massive potential to mitigate climate impacts over the next decade. However, our climate has already changed. Therefore, in addition to thinking about climate mitigation, the AEC industry is now faced with adapting to climate change (i.e., what about changing conditions today and into the future do we need to consider to provide clients with viable solutions?).

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Climate adaptation has always been a part of a broader conversation at VHB around sustainability. Sustainability has always served as a foundational element of VHB since our founding and is an integral part of our approach. It is important to understand the full context of a project so that we can understand how any project will withstand or be vulnerable to climate change. To gain this perspective on any project, VHB considers the social, environmental, and economic issues as a baseline in our thinking. More specifically, some clients such as state and local governments and institutional clients, are dedicated to combating the climate crisis through development of Climate Action Plans. The AEC industry is the guide ushering clients through a complex process as they strive to become resilient and carbon neutral or fossil fuel free in an equitable manner. VHB's commitment to sustainability and resiliency allows us to look at all aspects of Climate Action Planning and develop a holistic, long-term solution.

At the planning level, two prominent examples from our New England Region are the 2019 Climate Action Plan update for Boston, MA, and the work we are doing with Northeastern University. The City of Boston is focused on its goal of achieving carbon neutrality by 2050. VHB helped establish an innovative, yet practical, implementation roadmap to prioritize and advance initiatives to address climate change. The 2019 Climate Action Plan Update guides the City as it seeks to reduce greenhouse gas emissions at a community-wide scale, improve energy efficiency and conservation, achieve zero waste, and prepare neighborhoods for anticipated climate change impacts.

Northeastern University is developing a clean energy roadmap for its Boston campus, as well as a larger Climate Justice Action Plan (CJAP) encompassing all global campuses. As a long-time partner of the University, VHB is working to expand upon their sustainability and resiliency planning efforts. A community-driven planning initiative, the CJAP's purpose is to recommend a roadmap to achieve carbon neutrality at Northeastern. Focus areas will include energy consumption and sourcing, transportation, climate resiliency, and the University's ability to affect change through its strengths in academia and research. Underlying the CJAP will be a focus on social, environmental, and economic justice.

The next five to 10 years are critical to both mitigating and adapting to climate change. The year 2050—only 30 years away—marks an important milestone in achieving carbon reductions necessary to keep the global climate stable. Our role in helping clients address their carbon reduction or other climate targets will have lasting benefits within communities as we seek to balance development and infrastructure needs with environmental stewardship. Over the next few years, the AEC industry will need to be well-versed in understanding our clients' vulnerabilities to climate change, as well as provide guidance and solutions to help them mitigate future climate impacts, mostly through reducing their greenhouse gas emissions. Having a technical understanding of climate change, including future projections, as well as being able to accurately account for GHG emissions, are two fundamental principles for firms in the AEC industry to advance if we are going to usher clients into a resilient future.

To prepare ourselves for an uncertain future, VHB's corporate leadership met with industry leaders on October 29, 2021, to explore current and anticipated societal impacts of climate change, financial and policy trends that are taking shape, and issues related to climate equity. Key insights and takeaways shared during the conversation included:

- Impacts on communities from climate change are far more complex than solely environmental degradation
- Society needs both mitigation and adaptation strategies to address climate change
- Technology will play an important part in meeting decarbonization goals
- Global energy transition will require significant investment partnerships
- Climate change adaptation and mitigation are shared challenges that require shared solutions—ones that do

not leave communities behind in the process

EBJ: What are some challenging Climate Adaptation Planning projects that you've performed recently?

DeVoe: VHB partners with clients to provide future-focused solutions for a more sustainable, equitable, and resilient tomorrow. One recent challenging project is redevelopment of the 161-acre Suffolk Downs site in East Boston and Revere, MA. This project provides a unique opportunity to prepare for climate change through upfront infrastructure planning, including a detailed vulnerability assessment with flooding modeling of on- and off-site impacts, and incorporating resilient design strategies and techniques.

The site, which is being redeveloped from the ground up into a new mixed-use neighborhood containing approximately 16 million square feet of building area, is complex. Topographic and environmental constraints proved challenging. The site is bounded by tidally influenced waterways and marshland, an active rail line, and a state highway. The site is also bisected by Sales Creek, a primarily man-made drainage channel that connects to the Belle Isle Inlet and Rumney Marshes Area to the east of the site.

VHB completed a Resiliency and Adaptation Study—the first of its kind for a private real estate development—to understand the potential climate change impacts on Suffolk Downs' interconnected water system. By analyzing current and future climate conditions for rainfall and coastal flooding, the team evaluated whether the development would displace floodwaters, determine if the project provided a resilient design, and recommend appropriate mitigation.

As part of a Working Group comprised of multiple state agencies and regulatory groups, VHB studied both current sea levels and various predicted sea level rise scenarios, using detailed hydrologic and hydraulic models to analyze data from a variety of sources. The results enabled the team to accurately simulate the flow of floodwaters under different scenarios using 2D modeling software. The final step was

VHB acquisition of Brinkerhoff Environmental Services

In January 2021, VHB completed the acquisition of **Brinkerhoff Environmental Services**, a 44-person environmental sciences firm with offices in New Jersey. VHB and BES share a mutual respect for the environment and a desire to help our clients navigate challenging obstacles as we work to improve the livability of our communities. BES has been providing environmental services for more than 35 years, with a focus on revitalizing urban communities and the redevelopment of environmentally safe public buildings. Working for a diverse client group, including in both public and private sectors, their services include Licensed Site Remediation Professional (LSRP) services; Phase I and II Environmental Site Assessments; management of Brownfields sites; soil and groundwater remediation; environmental planning and permitting; coordination with regulatory agencies, municipalities, community groups, and private developers; freshwater wetlands delineation and consulting services; and the preparation of Environmental Impact Statements. BES' Laura Brinkerhoff, LSRP, CPG, President and CEO, and John Checchio, Senior Technical Advisor, will join VHB as Principals.

to create visualizations of possible storm events to help communicate the project's many complexities to regulators.

As a result of VHB's Resiliency and Adaptation Study, the site developer, The McClellan Highway Development Company, LLC, an affiliate of The HYM Investment Group, LLC ("HYM"), committed \$6 million in mitigation funding to improve flood resiliency at the project site and more than 1,000 surrounding properties. The Resiliency and Adaptation Study identified several potential flood protection measures, including upgrading the existing state-owned pump station, constructing protective berms on the site, and installing tide gates. The study also investigated a more regional approach consisting of an off-site berm, topped by a recreational bikeway, that would connect Constitution Beach to Revere Beach and further protect the area from coastal storm surge.

The redevelopment of Suffolk Downs is considered an essential project for the Boston metro area, and will ultimately provide much-needed affordable housing to the communities of East Boston and Revere, and significant economic development throughout the lifespan of the project.

EBJ: Have you noticed an increase in technologies devoted to solve Climate Change issues? How are those technologies changing?

Mulholland: The world we live in is changing rapidly and clients are asking

for innovation. VHB understands big data and how to prioritize it as a solution to the shared challenges we face, such as climate change. The cost to address climate change is immense. Leveraging technology will be critical to reducing, quantifying, and monitoring emissions in the quest to meet decarbonization goals. Potential technology solutions include:

Carbon capture and storage (CCS) is a technology that involves capturing carbon dioxide from industrial processes, transporting it, and storing it deep underground.

Green technologies and/or energy efficiency upgrades can drastically reduce our carbon footprint. Efforts to improve energy and water efficiency by reducing demand to operate mechanical cooling equipment/portable or wastewater infrastructure, or store energy to be put back onto the grid during peak demand, can have a direct effect on urban air temperatures and reduce emissions.

Green hydrogen, produced by splitting water molecules into hydrogen and oxygen via electrolysis, leverages technology to provide clean power for a variety of sectors, from manufacturing to transportation, with its only byproduct being water. Green hydrogen will be critical in reducing the carbon footprint of aviation and shipping, which require high energy densities that currently only hydrocarbons can provide.

Integration of technologies that support smart transportation can reduce and/or eliminate GHG emissions. For example, optimization of signal systems and timings to reduce vehicular congestion; increasing use of electric, connected, and autonomous vehicles; improving efficiency for connecting mass transportation and mode-choice options.

Renewable natural gas, previously not cost-effective, is becoming so. RNG is methane from an agriculture operation, landfill, or sewage treatment plant (e.g., anaerobic digestion).

Data-informed decisions aid in the identification and evaluation of green technologies and in bringing more energy efficient solutions to the climate crisis. Using data for continual monitoring and evaluation helps to track progress being made towards our goal of achieving new zero by 2050.

EBJ: VHB provides services to a wide variety of markets. How is the demand of environmental services within the following markets?

Real Estate

Rodman: Real Estate transactions are driven by risk assessments. VHB works with developers early on to identify a site's environmental issues, through performing wetlands delineations and Phase I Environmental Site Assessments. Once we have this data, we can help owners understand the risks associated with a potential site and advise owners on the environmental impacts and how these may influence their development schedule. VHB is skilled at navigating the complex regulatory environment and securing permits to meet critical opening day schedules. Phase I Environmental Site Assessments also play an important role in determining the value of a property and the ability of a site to handle the development program. Increasingly, owners are relying on VHB for transactional level due diligence to provide greater certainty to potential buyers and facilitate a shortened due diligence process during the solicitation and evaluation of offers. In addition, resiliency is top of mind and VHB is seeing increased demand for innovative solutions to protect developments

McElligott: Transportation is what keeps the economy and our communities moving. We cannot be held back by adverse events including flooding, natural disasters, or extreme wind. Transportation agencies across the nation are focused on the design of resilient infrastructure that will withstand the impacts of climate change and they are prioritizing decarbonization in the transportation sector to get the U.S. on a path toward zero emissions. VHB is working with agencies to improve mobility, enhance communities, and balance infrastructure needs with environmental stewardship. We've developed Sustainable Management Plans and guidelines for various owners and delivered sustainable infrastructure solutions for improved access and safety across all transit modes.

Increasingly, VHB is using technology to drive data-informed decision-making and investments by agencies. VHB is also helping owners prepare for an autonomous future with electric fleets and focused on transitways that will incorporate solar-powered stations and green infrastructure. The Infrastructure Investment and Jobs Act includes reauthorization of the surface transportation program for the next five years. The funding will make certain that transportation agencies can rebuild roads and bridges, improve public transit systems, expand passenger rail, upgrade ports and airports, invest in EV charging infrastructure, remove diesel buses, and focus on reconnecting communities.

Energy

Dramby: Finding responsible solutions to minimize the impacts associated with climate change has taken center stage and has become both a global and national priority. As the world continues to transition to renewables and less carbon intense forms of generation, this will require significant improvements to our existing grid infrastructure. To help offset the challenges associated with the integration of renewables, the industry is investing heavily in energy storage and transmission lines to connect high areas of renewable production with high electricity demand areas. Energy clients turn to VHB for our broad knowledge of the regulatory environment and the latest energy policies to help devel-

op innovative solutions for energy projects while minimizing impacts to the environment.

VHB is seeing increased demand for environmental services to support the siting and permitting of these energy generation facilities, including wind, solar, and biomass/bio-gas facilities. In addition, we are helping our clients navigate federal policy and local regulations and managing environmental and community impacts to move the necessary transmission, distribution, and substation infrastructure projects forward. The Infrastructure Investment and Jobs Act will further expand access to energy efficiency and clean energy for families, communities, and businesses in America. Funds have been authorized in a variety of ways to help facilitate the expansion of clean energy across the country. This is a critical and necessary step forward towards helping to reduce impacts associated with climate change and providing future generations with cleaner, more affordable, reliable, and sustainable forms of energy generation.

EBJ: How has VHB's culture changed over the past year and how will employee life be at VHB on the years to come?

Kocur: Since our founding more than 40 years ago, VHB has placed a premium on our people and our culture. We believe that only by fostering an inclusive, welcoming, diverse, and supportive workplace can we create a community of professionals who come to work as their best selves, ready to deliver their best for our clients. It is an approach that continues to set VHB apart and help us thrive, even in these challenging times.

Over the past year, as everyone continued to weather the pandemic's ongoing difficulties, VHB's culture has been strengthened by our determination to face challenges together, supporting each other along the way—an approach that began, as it always has, at the top of the organization. From President & CEO Mike Carragher to Regional and Managing Directors across our footprint, VHB's senior leaders are exemplars of VHB's core values. Their personal commitment to and embodiment of VHB's culture continue to steer our 1,600+ people—in 32 offices across the

East Coast—through the choppy waters of an unprecedented year.

From the start of the pandemic, the leadership team—in collaboration with our **People + Culture Team**—recognized the challenges of moving to remote work and began to put in place programs to support and strengthen our culture, including:

Offering a 10-part **Reset for Resiliency** series, hosted by international resiliency expert Claire Breeze, to help employees cope with the stresses and challenges of the pandemic, both at work and at home.

Launching **VHB Together**, a virtual engagement platform with resources and connections that emphasizes our core value of balance and helps VHBers stay engaged, beat burnout, and foster a sense of belonging.

Developing a Community Conversations program—all-company livestreams with breakout discussions that give VHBers an opportunity to talk about social issues that impact our people, better understand one another, and strengthen our community. Developed in early 2020 by President & CEO Mike Carragher and Chief People Officer Keri Kocur, with support from VHB IDEAL (Inclusion, Diversity, Equity Alliance), seasoned diversity consultant Gwen Crider, and our People + Culture Team, the series offers a safe space to listen, learn, and connect, with the intent of building a more welcoming and inclusive VHB community. Over the past two years, VHB has hosted seven Community Conversations, with more than 400 people in attendance at the most recent event, representing 25 percent of the company.

Developing an **Unconscious Bias Awareness** workshop to increase employee awareness of bias, demonstrate how pervasive bias is, help us recognize when we are biased, and learn how to prevent that bias from affecting our decision making—all of which support VHB's goal of advancing a more diverse, inclusive, and equitable organization.

In addition, VHB's core value of collaboration guided us in thoughtfully shaping our evolving workplace. We devised a process that brought together executives,

managers, and employees from across our footprint to engage in dialog, analysis, and creative thinking. VHB formed a Workplace Evolution Team comprised of senior leadership. As part of their efforts, this team assembled four groups of eight employees, carefully balanced to include a range of professional experience, geographies, and disciplines to allow for diverse perspectives and ideas. The groups met virtually over several weeks to discuss the complexities of what VHB's workplace will look like as we transition, at some point and in some manner, more fully back to the office.

Drawing on our core values and generational company philosophy—along with input from the employee-led teams—the Workplace Evolution Team crafted 10 Guiding Principles that will steer the company through the uncertainties of today and tomorrow. They are designed to safeguard and strengthen our unique workplace culture, ensuring that all VHBers will find an open, welcoming, and supportive workplace in the years to come, regardless of the challenges we face in the future.

VHB is planning for a vibrant, successful return to our 30+ offices, balanced with individual flexibility. This will be a partnership that relies on mutual trust to create and embrace a hybrid model that we hope to establish as the gold standard of our industry. We are committed to remaining flexible and prioritizing the health and safety of our people, while continuing to deliver superior innovation and solutions for our clients and communities.

None of us can predict when the pandemic will end or where it will lead us. But by proceeding thoughtfully and leading with our values as an organization, we are confident that together we will build a viable, sustainable, and inclusive future for VHB and for our people—whatever that future looks like.

We don't want to change who we are. We want to build on the strong, connected workplace culture we've always had, helping our people to grow, thrive, connect with each other, and improve their work-life balance. ■

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