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STANTEC EXPANDS NATURAL CAPITAL PRACTICE, BUILDING RESILIENCE & UNLOCKING VALUE IN ECOSYSTEMS

Stantec is a global design and engineering firm, uniting more than 22,000 employees working in over 350 locations across 6 continents. The company's environmental services practice – over 2,700 environmental professionals working out of 150-plus offices throughout North America – draws from more than 20 technical specialties uniquely suited to client challenges by merging world class knowledge with local expertise.

Stantec teams focus on applying science and engineering to optimize the relationship between natural and built environments under the banner of safety, quality, and regulatory compliance, collaborating across disciplines and industries on energy and resource, environmental, buildings, water, and infrastructure projects. Their work—professional consulting in surveying, environmental sciences, planning, engineering, landscape architecture, project management, and project economics—begins at the intersection of community, creativity, and client relationships.

To further enhance its global environmental services footprint, in early 2021 Stantec recently acquired **Wenck**, a 300-person US-based environmental engineering firm with core expertise in air, water, waste, food processing, natural resources, and infrastructure. And in late 2020 Stantec acquired **AGEL adviseurs,** a 75-person engineering firm in the Netherlands focused on supporting the circular economy, climate adaptation, area development, and the energy transition. Stantec believes Natural Capital has the capacity to underpin and support every aspect of the company's business. Sustainability, climate change mitigation, and carbon net zero, which seem to be the most prevalent emerging priorities across all their client sectors, are goals that can be attained through the support of strategically designed natural capital projects.

Tim Reilly, Natural Resource Valuation Program Director. Mr. Reilly is an environmental scientist with over 35 years of experience in performing freshwater, marine and coastal environmental impact assessments (EIA), natural resource damage assessments (NRDA) and natural resource/capital ecosystem valuations. He provides remedial oversight and restoration of habitats impacted by development and other anthropogenic impacts to terrestrial, coastal, and marine environments. He has conducted natural capital, EIA and NRDA work globally.

Virginia (Ginny) King, Senior Natural Resource Scientist. Ms. King possesses extensive expertise within the environmental and natural capital arenas, designing and executing innovative solutions for clients and the environment for over 31 years. Filling the role of a Natural Resource Trustee representative for the State of Texas in the early 1990's, Ms. King acquired Natural Resource Damage Assessment (NRDA) experience both in the expertise of process, and the utilization of quantification methodologies.

Doug Stewart, Senior Principal – Environmental Services Practice. Mr. Stewart is a Wetland Scientist and Ecologist with over 25 years of professional natural resource consulting experience. He works both domestically and internationally and his work focuses on natural resource characterization in both terrestrial and aquatic environments, ecological impact assessments, ecological restoration, ecological risk assessment, National Environmental Policy Act, Clean Water Act Permitting, Emergency Planning and Response, Natural Resource Damage Assessments, expert witness testimony, and third-party reviews. Doug is the Corporate Sponsor for the Natural Resource Valuation Program and much of his work over the past two years has focused on building Natural Capital as an emerging service area to better serve the environmental industry in the future.

EBJ: Stantec recently added Natural Capital services into its company offerings. Tell us about the process that you went through to develop these services from idea to deployment?

Stantec: Natural capital evolved out of our Natural Resource Valuation (NRV) Program. For years, we have characterized ecosystem services (provided by habitats, biota and other natural resources) and the relative changes in how ecosystem services from "natural capital" (renewable and non-renewable natural resources) change in quality and value as the result of anthropogenic impacts (e.g., oil and hazardous substance spills, construction, industrial activities, etc.).

Such baseline and environmental impact characterizations in the form of natural resource damage assessments, environmental impact investigations and mitigation analyses formed the initial basis of our natural capital program, resulting in the formal development of our Natural Capital business plan in 2017.

Working with a range of industrial and power clients on several natural capital issues, including compensation for losses to ecosystem services from operational, industrial, construction, and mining activities, we realized that there are market drivers for natural capital services. Given Stantec's expertise in natural resources, natural resource valuation, and other related topics, we have grown organically to meet the market demand.

Currently, Stantec has staff conducting natural capital services for clientele in the United States, Canada, and the U.K., and our work around the globe is rapidly ex-

panding.

EBJ: What has been the outcome so far?

Stantec: Natural capital services have been a solid addition to Stantec's Natural Resource Valuation (NRV) program from the perspectives of revenue generation and NRV Programmatic growth. We continue to win natural capital projects in the United States and globally, increasing NRV Program revenues by 500% since 2018. Moreover, we see excellent growth opportunities in natural capital services as more and more project opportunities are identified weekly.

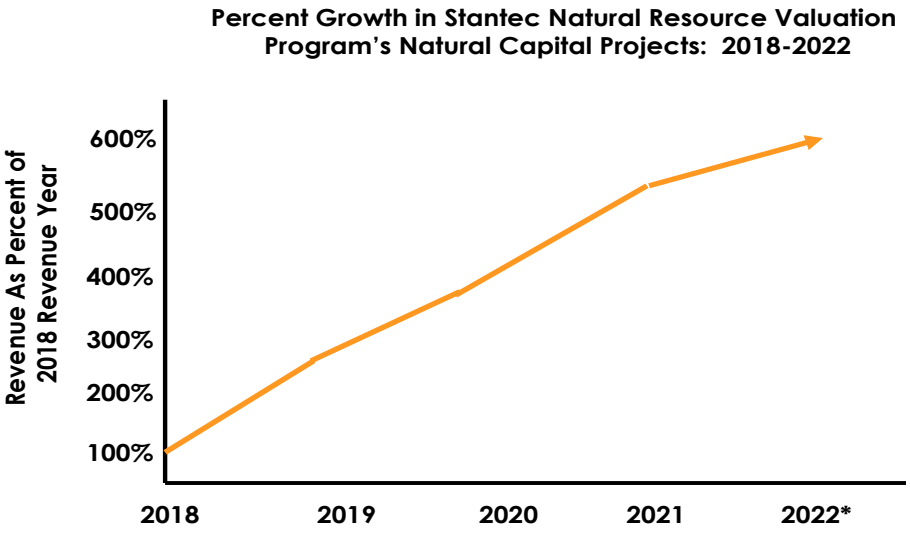
We have experienced substantial growth in our natural capital consulting services given our global clientele's need for natural capital supported permitting, asset management, and environmental liability management services, quadrupling in size since 2017. Accordingly, the NRV program has a bullish outlook with regards to continued provision and growth of natural capital services.

EBJ: How are you integrating natural capital into permitting projects to determine and design mitigation? And how is this different from the way in which Stantec has conducted this in the past?

Stantec: Natural capital considerations are an integral part of the permitting process for many of our clients. Instead of traditional and often arbitrary methods for quantifying anthropogenic impacts on a single resource or habitat ("horse trading"), impacts from development activities may be reviewed on an ecosystem level with a focus on services provided by ecosystem components. This way, relative impacts to ecosystem services can be evaluated to determine the overall impacts to the system. This results in a more comprehensive approach to quantifying environmental impacts and compensatory mitigation (CM).

Further, mitigation strategies that address climate change issues may be integrated into chosen mitigation or restoration strategies. Quantitative Mitigation Analysis (QMA) is a published methodology developed by Tim Reilly, Stantec NRV Program Director (see box), to assist project developers and regulatory agencies alike with developing or evaluating cost-effective, defensible, quantitatively based CM strategies for projects that result in the taking of, or diminution in quality to, habitats and related natural resources. QMA quantifies loss of ecological service function from proposed developments and determines the amount of mitigation required as compensation. Further, QMA is consistent with regulatory agency best practices.

Within the NRV Program, we have used QMA to quantify CM requirements for major linear (transmission line), mining, commercial construction, and offshore power projects for the benefit of project developers and the regulatory community alike. QMA removes the guesswork commonly associated with quantifying CM for any manner of natural resource, facilitating equitable mitigation costs for all parties.



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Noteworthy Recent Stantec Natural Capital Projects

Western US Mine: For a Western US mine in permitting, we calculated the loss of ecosystem services for a projected mining operational period of more than 10 years. We characterized the baseline forest natural capital and the likely losses resulting from mining. We subsequently determined the scale (size) of restoration projects required to compensate the public for the loss of specific forested areas and accompanying natural resources, streamlining the permitting process for a significant mining effort.

Midwest Migratory Bird Habitat: As part of the planning and permitting of a new 50+ mile linear transmission line in the Midwestern US, hundreds of acres of migratory bird habitat were cleared. Stantec's natural capital services were used to characterize the baseline quality and quantity of the habitat, as well as the unique and specific needs of the migratory bird habitat. We further designed, located, scaled, and costed a live oak savannah habitat to compensate for the loss of this important migratory bird habitat. This work compensated for project-induced habitat losses.

Offshore Wind Farm Seabed and Intertidal Impacts: Natural capital services were used to quantify the scale, type, and nature of losses to benthic (seabed) and intertidal habitat associated with the design of an offshore wind facility in the Northeastern U.S., resulting in the quantification of compensatory mitigation requirements for the permitter and project proponent. Accordingly, we can quickly assess land and aquatic ecosystem service losses related to such renewable power developments, and develop right-sized, equitable and cost-effective mitigation strategies.

Transmission Line Right of Way Natural Capital Benefits: Stantec developed a process for the quantification and valuation of the ecological and cultural services natural capital services related to transmission line right of way lands for potential corporate ESG and other tax and environmental liability management considerations. Natural capital services can play a significant role in developing cost-effective strategies that help manage tax and environmental liabilities associated with land holdings. This project helped to better understand how such liability management strategies can help corporations with land holdings.

Divestment of a redundant property: Natural capital was integrated into a divestment strategy to identify the most productive end use of a redundant property in the Midwestern U.S. that would complement local priorities and preserve valuable ecosystem services. This specific divestment resulted in a reduction in environmental balance sheet reserves, tax benefits for the client, and creation of a local park, expanding a highly desired recreational area for the local community.

EBJ: In which ways are you unlocking hidden value within natural capital for your clients?

Stantec: There are numerous ways to acquire value through natural capital and there are also many opportunities to appreciate that value. Natural capital can generate value by harvesting, developing, or extracting it and bringing it to market, or through the ecosystem services it provides. Ways that hidden value can be unlocked include:

- Minimizing unnecessary mitigation to offset a project footprint;
- Designing a creative remedial solution that increases, sustains, or protects natural capital in concert with acquiring regulatory closure;
- Designing a nature-based solution to manage an operational component that generates additional benefits such as increased carbon sequestration and reduced operational costs;
- Reducing environmental and tax liabilities; and
- Divesting redundant or legacy properties.

EBJ: How are you planning on promoting and increasing your Natural Capital Valuation services in 2021?

Stantec: We work both externally with new and existing clients, and internally within the Stantec community to raise awareness of our natural capital service offerings and capabilities (as well as other Natural Resource Valuation services such as natural resource damage assessments). As with all consulting: good work begets more work. We are able to increase our footprint in the natural capital space by providing exceptional natural capital services and/or designing natural capital strategies to cost-effectively support permitting and consulting projects, where indicated. Further, we convene webinars and workshops on natural capital with investors, developers, risk managers, and clients.

We also raise our visibility by participating in a range of domestic and international working groups (i.e., International Union for the Conservation of Nature, Natural Capital Coalition and Wildlife Habitat Council for example).

Stantec also lends our experience and technical expertise within the natural capital arena through initiatives that prioritize preservation of biodiversity, preserving valuable and threatened natural resources in areas where nature-based, or natural capital solutions can generate multiple benefits.

For example, Stantec is involved in supporting Public Private Partnerships (P3s) where privately held natural capital can be divested to support the priorities of public municipalities to preserve and sustain resources into the future.

EBJ: What can you comment on market trends that relate to Natural Capital services?

Stantec: The increased awareness of natural capital and its direct link to preserving quality of life has been gaining momentum over the last several years across the globe. While the specific heightened awareness of natural capital, which originated in the European Union (EU), was primarily focused on the impacts and dependencies of natural capital and the importance of balancing these two components, the extent to which natural capital can "generate value" has taken a new turn.

Significant impacts such as higher than usual hurricane events and wildfires across the globe have resulted in the pursuit of nature-based solutions. These influences have resulted in the pursuit to understand the potential natural capital can offer, beyond integrating impacts and dependencies of natural capital into a supply chain discussion.

Our private clients are now seeking projects that allow them to:

- Unlock hidden value in their portfolios of which they were not previously aware;
- Protect their infrastructure and minimize avoidable economic impacts;
- Offset their carbon footprint;
- Limit unnecessary capital expenditures;
- Increase their commitments to sustainability; and
- Reduce environmental reserves on their balance sheet, in concert with enhancing their brand.

Our public clients are pursuing projects that equip them to protect and sustain resources for public consumption beyond their traditional investments.

Our financial clients are prioritizing "green" or nature-based solutions over traditional investments as a means of enhancing their corporate reputations. Sustainability, climate change mitigation, and carbon net zero, which seem to be the most prevalent emerging priorities across all our client sectors, are goals that can be attained through the support of strategically designed natural capital projects.

The availability of remote sensing technology, eDNA and availability of endorsed quantification methodologies has elevated the capacity to deliver value-generating natural capital solutions economically. It is anticipated that the natural capital market will only continue to flourish as there is an ever-growing awareness of the importance of natural capital, an amplified priority around achieving the United Nation's 17 Sustainability Goals, and there are realized influences of climate change and commitments around net zero carbon.

The demand to balance economic generation, environmental protection and preservation will continue to escalate. Natural capital strategies can support the building of that paramount bridge sustaining life across our globe. Among Stantec's corporate pillars is Ecosystem Restoration, which is directly linked to the United Nation's (UN) Next Decade of Ecosystem Restoration. Stantec is expanding its design and execution of strategic ecosystem restoration projects and inventorying and quantifying the resulting increases in natural capital and ecosystem services. This is being done to demonstrate the abundance of benefits that can be realized through nature-based solutions. As more and more companies are seeking avenues to demonstrate their sustainability commitments, amplify their corporate stewardship reputations, and offset their project footprints, natural capital integration supports the opportunity to achieve ambitious but critical goals in challenging economic times by highlighting practical, cost-effective, and feasible solutions.

EBJ: How has eDNA technology evolved over the past couple of years, and how much more do you think we will be able to achieve with it in the next few years?

Stantec: Over the last several years, eDNA technology and methods have advanced considerably. Initially, we relied on research scientists for laboratory-based analysis and now we work with commercial laboratories for eDNA analysis across North America. Now, we are using handheld equipment in the field for eDNA analysis and results are available in about an hour. The use of metabarcoding with next generation sequencing (NGS) has taken us from detecting single species to multiple species and a full spectrum of taxa, including microbes, plants, and animals. With recent developments in NGS technology, more than 100 samples can be analyzed in a lab at one time, allowing for broad characterization of biological communities for biodiversity monitoring. These developments support ecological characterization and is applied to our Natural Capital projects. Ongoing research in the use of both eRNA and eDNA allows us differentiate between living organisms in the habitat we are sampling versus remnant sources. Initial applications of eDNA were used to identify the presence/absence of aquatic species. There is now intense, ongoing research towards using eDNA for quantifying species populations. New tools are being developed to detect terrestrial species, characterize deep sea and coastal biological communities, and new applications for monitoring ecological restoration, remediation, and reclamation. We are actively participating in the advancement of this research and we are excited about the possibilities and how it can be used to further support our Natural Capital clients.

EBJ: In which other ways has your Natural Resource Consulting Practice experienced increased acceleration when it comes to innovation?

Stantec: Our development of Quantitative Mitigation Analysis (QMA) services (which characterize both the baseline and the impacts to natural capital quantity, quality, and value due to construction, commercial, and industrial activities) has distinguished Stantec in the natural capital services arena. This has brought Stantec

both domestic and international attention, as we have presented QMA at conferences and symposia (e.g., International Symposium on Rights of Ways, Aquatic Ecosystem Management and Health Symposia, etc.). It has also helped us gain competitive advantages in the marketplace and facilitated additional natural capital project wins within Stantec's Natural Resource Valuation program. These actions begat additional staff hires in the last few years and strategic coordination regarding natural capital services at Stantec in the US and abroad.

EBJ: What changes do you envision for your Natural Resource Valuation Program in 2021?

Stantec: We are increasing our coordination and training of additional Stantec staff to meet client and project demand. Our NRV staff are participating in additional internal and external working groups involving natural capital and ecosystem restoration as these two disciplines seek to address changes in the quantity and quality of ecosystem services. In the US, the new administration's environmental focus - such as the January 2021 combatting climate change Executive Order - presents several opportunities related to the role natural capital may play in environmental improvements and combatting climate change, which we are pursuing at this time. □

Quantitative Mitigation Analysis is a Newly Published Methodology Developed by Stantec's NRV Program Director

Quantitative Mitigation Analysis (QMA) is a methodology developed to assist (construction) project developers and regulatory agencies with developing defensible, quantitatively based compensatory mitigation strategies for large and/or complex construction projects that result in the taking of, or diminution in quality to, habitats and related natural resources.

QMA quantifies loss of ecological function from proposed development and determines the amount of mitigation required as compensation. The cost of compensatory mitigation required is the cost of a project required to provide an equivalent nature, type, and degree of ecological and/or public use services which were directly or indirectly lost by a development.

QMA leverages Habitat/Resource Equivalency Analysis (HEA/REA are analytical tools developed to determine compensation for losses to natural resources from a spectrum of human-induced impacts). HEA/REA applies a framework for scaling (i.e., sizing) project impacts for quantifying compensatory mitigation. HEA/REA computes resource losses over time resulting from environmental perturbations, and resource gains over time resulting from CM Projects. As such, HEA/REA may be used for calculating mitigation requirements for practically any habitat or natural resource. Moreover, HEA and REA analytical tools are widely-accepted methodologies for calculating lost and gained services following an environmental perturbation. Federal and state governments in the United States have used HEA and REA in both natural resource damage assessments and for some mitigation computations; hence, conferring acceptability for QMA methodologies.