State of Alaska, Department of Natural Resources
Division of Mining, Land & Water
Northern Regional Office

Preliminary Finding and Decision
San Diego State University
ADL 420816 Special Land Use Permit (11 AAC 58.210)
ADL 420816 Public and Charitable Lease (AS 38.05.810(a))
ADL 420817 Public Easement (AS 38.05.850)

Proposed Action

The Global Change Research Group at San Diego State University (SDSU) applied to the Department of Natural Resources (DNR) Division of Mining, Land and Water (DMLW) Northern Regional Office (NRO) to lease 6 acres of state land to conduct long-term climate research on the North Slope. SDSU is currently authorized under a Land Use Permit (LAS 31276) for an eddy covariance tower (a meteorological tower with instrumentation to measure a variety of atmosphere gas emissions and fluxes such as methane) and a power production system to support the eddy covariance tower. Due to the long-term nature of the research and the proposed plan to add a wind turbine to the power production system, SDSU is requesting a 25-year public and charitable lease (ADL 420816). The requested lease is located to the east of the Ivotuk airstrip within Section 24, Township 11 S, Range 17 W, Umiat Meridian.

In addition to the lease, SDSU also applied for a public easement to provide legal access to the site. The requested public easement (ADL 420817) encompasses the nearby landing strip, and is approximately 500 feet in length and 150 feet in width, encompassing approximately 17.2 acres. The public easement provides legal access to the lease. The requested easement is located within Sections 13 and 24, Township 11 S, Range 17 W, Umiat Meridian. See Attachment A for the site map.

Since the land is not currently classified and a site-specific classification cannot be undertaken during the on-going North Slope Management Plan process, DMLW is not able to issue a lease or easement at this time, per 11 AAC 55.040(i). Therefore, DMLW proposes to initially issue a Special Land Use Permit (SLUP) under ADL 420816 for construction, survey, appraisal, and use of the proposed research site. Once the management plan process is complete and contingent upon the land being classified appropriately for lease issuance, DMLW intends to issue a negotiated lease to SDSU at 50% appraised fair market value rental for the operation and maintenance of the research site, including its remote power production system. Upon issuance of a lease, DMLW also intends to issue a public easement to provide legal access to the lease. The term of SLUP will be included within the total term of the 25-year lease and easement.

This document serves as the preliminary State's best interest finding regarding the proposed actions, including issuing a SLUP to SDSU and the intent to issue a lease and public easement to SDSU, contingent upon appropriate classification in future.

Scope of Review and Proposed Finding

The scope of this Preliminary Finding and Decision (PD) is to determine if it is in the State's best interest to issue (1) a SLUP to authorize construction, survey, appraisal, and use of the proposed research site until the land is classified, (2) a negotiated public and charitable lease under AS 38.05.810(a) at less than Fair Market Value (FMV) to SDSU for a research site, and (3) a public easement under AS 38.05.850 to SDSU to provide legal access to the site. The scope is based

on the statutes, regulations, and other facts contained in the casefiles for ADLs 420816 and 420817.

Authority
The proposed authorization is being adjudicated pursuant to 11 AAC 58.210, Special land use permit, and 11 AAC 96, Miscellaneous Land Use. DMLW's intent to issue the proposed lease is being adjudicated pursuant to AS 38.05.810(a), public and charitable. AS 38.05.810 allows DMLW to lease state land for public purposes at less than fair market value. The Director, Division of Mining, Land & Water (DMLW), is authorized by AS 38.05.035(a)(6) to act on behalf of the state in this matter. Also applicable include: AS 38.04.005, policy; AS 38.05.075, leasing procedures; AS 38.05.035(e), written finding; AS 38.05.945, public notice; and 11 AAC 58, leasing of land.

DMLW's intent to issue the proposed easement is being adjudicated pursuant to AS 38.05.850, permits; AS 38.05.035(a), powers and duties of the director; AS 38.05.285, multiple use; and 11 AAC 51, Public Easements.

Administrative Record
The current case files, ADLs 420816 and 420817, comprise the administrative record for this case. The land use permit, LAS 31276, authorizing the research site beginning September 2016.

Location
The proposed lease site is located to the east of the Ivotuk airstip; (68° 28' 49.82" N, 155° 45' 24.75" W). The proposed easement connects the lease tract to the airstrip and then extends over the airstrip to section line easement, and it provides legal access to the unmanaged airstrip (Attachment A).

Legal Description
The lease site is located within the W1/2NE1/4 of Section 24, Township 11 South, Range 17 West, Umiat Meridian, containing approximately 6 acres more or less. See Attachment A.

The public easement is located within the SE1/4SE1/4 of Section 13, Township 11 South, Range 17 West, Umiat Meridian and the W1/2 of Section 24, Township 11 South, Range 17 West, Umiat Meridian, containing approximately 17.2 acre acres more or less (5000' x 150').

Borough/Municipality: The site is within the North Slope Borough. No borough lands are involved.

Regional Corporation: The site is within the Arctic Slope Regional Corporation (ASRC) boundaries. No corporation lands are involved.

USGS map: Killik River B-5, 63K

Adjacent Landowners: The site is surrounded by state land, though ASRC land is approximately 500 feet to the east of the proposed lease tract.

Water Bodies: None.

Title
The State received Tentative Approval 2003-001312-0 on October 31, 2003 under GS 4553. Standard reservations apply.

Third Party Interests
No encumbrances or third party interests exist that would prevent the issuance of a SLUP or a lease or easement at a future date.

Planning and Classification
The proposed research site and easements are within ADL 50666, North Slope Area Special Use Lands (11 AAC 96.10) which requires a permit for motorized vehicle use, unless that use is for subsistence purposes or is on a graveled road. The Special Use Land designation would not prevent issuance of a lease for a research site or a public easement to provide legal access.

The proposed lease site is not located within the boundaries of an area plan and is not classified. Beyond the Special Use Lands designation, there has been no prior planning related to this area. Currently, the North Slope Management Plan process in on-going. This is discussed further in the Lack of Classification and Issuance of a Special Land Use section.

Traditional Use Finding
The subject lease and easement sites are located within the North Slope Borough. A traditional use finding is not required for sites located within an organized borough.

Access
Physical access to the lease site is via the unmanaged Ivotuk airstrip. Legal access to the lease site will be via the proposed public easement (ADL 420817) which overlays the unmanaged Ivotuk airstrip and connects the lease to a section line public easement.

Hazardous Materials and Potential Contaminants
The primary environmental risk associated with this proposed lease would be possible disturbance to the tundra ecosystem, specifically to the underlying permafrost, through installation and long-term presence of the wind turbine's foundation. Risk may be decreased through the proposed design of the foundation, which uses base plate rods and guy anchors to minimize the footprint of the wind turbine.

An additional minor risk includes the possibility of minor spills during refueling of the diesel storage tank. Spill risks may be minimized by following standard fuel containment and transfer procedures as described in the stipulations of the SLUP and/or lease.

There are no known environmental contaminants within the proposed site.

Performance Guaranty
A performance bond will be required (1) to incentivize performance of the conditions of the SLUP and the lease and easement and (2) to provide a mechanism for the state to ensure that the lessee shares in financial burden in the event of noncompliance for site cleanup, restoration and any associated costs after termination or expiration of the leases. Calculating the bond amount by using the DMLW performance guaranty matrix yielded a bond for both authorizations in the amount of $38,263. DMLW reviewed risk associated with the proposed development and activities on site and found this to be appropriate considering the amount of risk involved with the scale of infrastructure being placed in a remote location. DMLW therefore proposes adjusting the performance guaranty to an even amount of **$38,000**. The performance guaranty is due prior to issuance of the SLUP and will remain in effect throughout the terms of the SLUP, the lease, and easements.

Insurance
To protect the State from liability associated with the use of the site, SDSU will be required to provide and maintain a comprehensive generally liability insurance policy with the State of Alaska named as an additional insured party for the lease site. To correspond with the current amount of insurance required by DMLW for similar cases, the insurance requirement for each lease will be no less than $1,000,000 per occurrence and $2,000,000 per annual aggregate. The insurance requirement may be adjusted periodically.

Survey
A survey that is acceptable to the standards of the DMLW Survey Section is required for the long-term lease (ADL 420816). The public access easement (ADL 420817) should also be included in the survey. The public access easement will include both the unmananged airstrip and the connect from the airstrip to the lease tract (as depicted on Attachment A). Upon completion of construction of the research site, the survey for the lease and easement that is acceptable to the standards of the DMLW Survey Section will be required for review by both the DNR Statewide Platting Officer and the North Slope Borough, which is the platting authority. The survey must be performed by an Alaskan-registered Land Surveyor under survey instructions issued by the DMLW Survey Section. The DMLW Survey Section must be contacted within 6 months of the SLUP being issued so that survey instructions can be issued in a timely manner. The preliminary plat must be submitted within one year of issuance of the survey instructions. The applicant is responsible for the costs of the survey and the costs of platting actions required.

Appraisal – ADL 420816
As per AS 38.05.075, the department may establish a method of lease compensation; leases under AS 38.05.810(a) are public or charitable leases that may be available for less than appraised value. A formal appraisal at the expense of the applicant will be required, to establish annual rental based on a percentage of fair market value (FMV). Since the lease is for academic research, DMLW proposes to set the annual fee at 50% of FMV, which is further discussed in the Lease Discussion section. The appraisal must be approved within three years of the SLUP being issued. Additionally, prior approval and compensation of no less than 25% to the State will be required in the event of sublease. Subleases shall be restricted to those entities which also qualify under AS 38.05.810(a).

Until the appraisal is completed, minimum rent is set at the DMLW standard of $1000. Once the appraisal is completed and annual rent is determined based on 50% FMV, then any overpayment prior to completion of the appraisal will be credited to future annual rent payments, or any upward adjustments to annual rent will be applied.

In accordance with AS 38.05.105, the annual rent payment or other form of lease compensation is subject to adjustment at five-year intervals.

Land Use Fee – ADL 420817
Per 11 AAC 05.010 (e) (12), the land use fee for a public right-of-way or easement under AS 38.05.850 for a road, trail, or airstrip, is a one-time fee of $50 per acre unless otherwise provided in a reciprocal right-of-way agreement. The proposed easement is approximately 17.2 acres, with easement fee of $860.

Agency Review

Agency review for the public and charitable lease and public easement was conducted from March 10 through April 10, 2017. The review requested comments on the proposed lease and easement. Review was sent to the following agencies:

- DMLW, Water Section
- DNR Division of Oil and Gas (DOG)
- DNR Office of Project Management and Permitting
- DNR State Historic Preservation Office
- DNR State Pipeline Coordinator's Section (SPCS)
- Department of Environmental Conservation (DEC)
- Department of Fish and Game (ADF&G), Division of Habitat
- ADF&G, Division of Wildlife Conservation
- Department of Transportation and Public Facilities (ADOT&PF)
- US Fish and Wildlife Service (USFWS)
- US Army Corp of Engineers
- US National Park Service (NPS)
- US Bureau of Land Management (BLM)
- Federal Aviation Administration (FAA)

The North Slope Borough and Arctic Slope Regional Corporation (ASRC) were also sent notice of the proposed actions.

ADOT&PF, ADF&G, and DEC provided no objection to the issuance of the proposed lease.

FAA commented that the Ivotuk Airstrip is not a federally obligated public use facility; therefore, the FAA does not oversee actions associated with that airstrip. FAA did note that that SDSU may be required to file a "Notice of Off Airport Construction" for the wind turbine, and this information was passed on to SDSU.

USFWS has review the application in regards to the Endangered Species Act, the Bald and Golden Eagle Protection Act, and Migratory Bird Treaty Act (MBTA). USFWS notes that there are no threatened or endangered species in the vicinity of the project; and therefore, a Biological Assessment or further consultation regarding this project is not necessary at this time.

USFWS has reviewed the location of the proposed lease and notes that immediate area (<1 mile) does not indicate the presence of golden eagles in the vicinity; therefore, USFWS does not expect project-related activities to adversely impact golden eagles. Ultimately, the SDSU is responsible for preventing disturbance to eagles. If an eagle nest is discovered within a mile of the project site, please contact the USFWS office for further assistance.

MBTA prohibits the willful killing or harassment of migratory birds. To minimize disturbance to nesting birds and help comply with the MBTA, USFWS recommends initial land disturbing activities (e.g., clearing, excavation, gravel fill, brush hogging, etc.) not occur from June 1 to July 31.

USFWS suggests using monopole tower design that precludes the need for stabilizing guy wires, and prevents birds from perching or nesting on the tower, which increases the likelihood of collision with the turbine rotor. If the design requires guy wires, the wires should have daytime visual markers (bird diverters) to prevent collisions by diurnally moving birds. The Avian Power

Line Interaction Committee (APLIC) has developed guidelines and BMPs for designing communication towers, new power poles and lines, as well as retrofitting existing poles, for avian safety: http://www.aplic.org/uploads/files/2643/SuggestedPractices2006(LR-2).pdf

SDSU response: The USFWS are reasonable and SDSU will make sure that their contractor installing the wind turbine is provided the USFWS comment about the tower design.

DMLW response: DMLW will include its standard stipulation in all authorizations resulting from this adjudication process that will prevent land clearing during the bird nest window. Additionally, DMLW will also require that any guy wires installed on the wind turbine have daytime visual markers (bird diverters) to prevent collisions by birds.

ASRC responded to the agency review with a number of general concerns and questions related to the proposed lease. The comments were passed to SDSU for their opportunity to respond. Below are a summary of the concerns and question, and the SDSU response (in italics):

- ASRC doesn't completely understand the need for such a tall/large wind turbine when a much smaller one sufficed for 13 years at the previous location and provided power to a number of scientific sites at Ivotuk. ASRC noted that generally speaking, Ivotuk is not one of the most windy locations in the state.

SDSU response: In response to new projects funded by multiple agencies, including NASA, SDSU has upgraded the measurements and instrumentation. This increase in instrumentation and measurements increased the power demand of the system beyond what was needed 13 years ago. In addition, environmental concerns and budget realities dictate that as much renewable energy as possible is. SDSU recently upgraded our equipment at our eddy covariance tower and added a heated anemometer to avoid large gaps in data collection due to ice formation on the instruments during winter period and this requires more power at the site. SDSU needs to keep the instrument ice-free and enclosures at constant temperature to be able to collect quality year-round data. Also, SDSU added a high resolution temperature profile at the site to determine soil and snow temperature profile, zero curtain duration and extent, water table depth, snow depth, and active layer depth and additional soil moisture sensors. SDSU is also adding additional experiments for determining winter fluxes of carbon dioxide and methane. All of these additions require additional data over what was required when the previous system was designed and installed.

Importantly, the previous 1 kW wind turbine was undersized and, as a result, the previous diesel generator was overworked. The 1 kW turbine was inadequate for the project then, and is definitely undersized now. According to the reports we received, the generator at the previous location was running every few days in the winter, supplying virtually all of the power for winter operation. According to calculations we ran, whereas the 10 kW Bergey would supply over 90 % of the necessary power in winter, a 1 kW turbine would supply only about 13% of the necessary power. There were several years of development to get the original CPS project to a sustainable point. With extremely high operational costs SDSU now need to avoid these high operational costs. This can be done with a wind turbine of the proper size. This past year without a wind turbine, the generator had a large amount of run time, particularly November through March, which SDSU would like to avoid in subsequent winters. The fact that this is a low wind area, as pointed out, increases the specified size for the wind turbine since neither the generator nor the wind turbine can run at full output. While a smaller wind turbine was in use for several years at the previous site, it did little to supply power for the site and reduce generator run time. It did not suffice for the

application, and with additional loads at the site, the previous wind turbine would be even more inadequate at this time.

- ASRC expressed concern that the tower's proximity to ASRC lands may devalue ARSC's land for subsistence hunting and other wilderness values. Caribou use this area heavily every fall as it is within a major migratory area. Will the visual and noise disturbances from the large tower and turbine keep the caribou farther away, thus making them more difficult to hunt? Large turbine blades are very visible as they rotate and even though the sound made by the rotating blades is somehow likened to falling rain, there is nothing natural about the sound produced. ASRC would like to know if there is a way to mitigate some of these concerns and possibly not be so disruptive to the remote wilderness character of the area.

SDSU response:
Noise
A typical conversation has an average dBA rating of 55. The Bergey 10 kW turbine (at full wind and output) is reported to have a rating of 42.9 dBA. The smaller 1 kW wind turbine previously used in the area, the Whisper 200 turbine, is actually louder than the Bergey 10kW at 55-68 dBA, based on full wind speed. The typical diesel generator has an 80-103 dBA rating. Note this is the unattenuated level, so the fact that it is in a building will dampen the level and that the noise level from the wind turbine will vary based on wind speed. This is a low wind area so there will be minimal periods when the wind speed is such that the noise level will achieve the full 42.9 dBA. The majority of the time the winds will be lighter, which a correspondingly lower noise level. The diesel generator noise level will be the same every time the generator runs, which, based on the 2016-2017 winter operation is every 2-3 days without a wind turbine. While both the wind turbine and the diesel generator are not "natural" sounds found in nature, the wind turbine will result in a much quieter and less "un-natural" sound than either the generator or the smaller wind turbine previously used.

Visual
There is no doubt that the 23 ft blade span of the Bergey turbine will be more visible than the 9 ft blade span of the Whisper 200. However, it will also be centered at 40 ft off the ground so less obvious to wildlife that is in close proximity to the tower. The lower tips of the blades are at least 31 ft from the soil surface. As the distance from the tower/turbine increases, both the visual and aural impact will diminish. Research shows that wind turbines have no negative impacts on caribou herds (Colman et al. 2012)[1]. The company who will be installing the turbine, ABS Inc., has seen similar results with wind turbines on other areas of the North Slope. ABS Inc. staff have been on site and watched herds of caribou pass within 50 ft of a functioning wind turbine. There was no visible evidence of any concern on the part of the caribou. There will be minimal visual or aural impact to the surrounding area from the wind turbine.

- ASRC noted that the public lands at Ivotuk have a long history of usage by other user groups such as private hunters and other recreational users. Will this tower and turbine negatively impact their activities since it is located in the same general area they use? Trespass is an issue that ASRC deals with at Ivotuk; therefore, ASRC is concerned that this wind turbine may push people onto ASRC lands if they want to get away from the visual and sound impacts.

[1] Colman, J.E., S. Eftestøl, D. Tsegaye, K. Flydal, and A. Mysterud. 2012. Is a wind-power plant acting as a barrier for reindeer *Rangifer tarandus tarandus* movements? Wildlife Biology 18:4 (p. 439-445).

SDSU response: Based on the information derived from the 2016-2017 winter operation, the critical operating period for the wind turbine is mid-October to mid-February. There should be minimal caribou traffic or hunter/recreational user activity in the area during this period. The wind turbine will occupy an area approximately with a radius of 25 ft. The immediate vicinity is an area encompassing at least ¾ sq mile. The turbine will occupy 0.00018% of the immediate vicinity. It is unlikely that it will have any appreciable negative impact on hunters or recreational users, or force them onto ASRC lands.

- ASRC expressed concern regarding the overall condition of the airstrip. ASRC recognizes that it has held up incredibly well over the years without any maintenance but notes that time is starting to have an impact such as growth of willows on the strip and some dips in the surface. Extensive willow trimming required to enable a C-130 to land at the strip in June of 2016. Will this project require larger aircraft to access the strip in the future and will there be any strip maintenance required?

SDSU response: The largest aircraft used for this project will be either the SkyVan or the Sherpa, likely the SkyVan and that is only for a one-time use for installation. Neither aircraft will require any strip maintenance.

On May 5, 2017, ASRC provided a written statement that it doesn't have any issues with the responses provided.

DMLW response: While DMLW proposes to issue a public easement over the Ivotuk airstrip to provide legal access to the proposed lease, DMLW recognizes the airstrip as an unmaintained airstrip and will not be providing any management or maintenance for it. Due to the concerns raised by ASRC regarding the encroachment of willows onto the airstrip and long-term viability for larger aircrafts to land at the unmaintained airstrip, DMLW required SDSU to submit a Research Site Provisionary Dismantlement Plan (Attachment D), which includes the alternative of using a helicopter to remove infrastructure from the site if the airstrip is no longer functional for site dismantlement.

DMLW reviewed the questions posed by ASRC and the responses provided by SDSU. DMLW recognizes the validity of the concerns brought forth by ASRC and finds the additional information that SDSU submitted adequately addresses the concerns raised.

No other comments were received.

Public Review

Pursuant to AS 38.05.945(b)(3) public notice describing the three proposed actions of the lease and easement will be posted on the Alaska Online Public Notice System for 30 days. Notice will also be given to other known users of the Ivotuk airstrip, including ASRC, the U.S. Bureau of Land Management, Everts Air Cargo, Wrights Air Service, and Warbelows AirVentures.

Pursuant to AS 38.05.945(c)(1), notice will also be given for 30 days to the North Slope Borough. Per 38.05.946, Hearings, the North Slope Borough may hold a hearing within 30 days after receipt of the notice.

The public is invited to comment on the proposed SLUP, lease and easements. Comments should be submitted to DNR, DMLW, Northern Regional Office (NRO), at 3700 Airport Way, Fairbanks, Alaska 99709. Kimberley Maher can be contacted for further information at 907-451-2737 or at kimberley.maher@alaska.gov. Additional copies of the PD may be obtained from the

NRO. Interested parties have the right to comment during the public notice period and the commenters who are aggrieved by the Final Finding and Decision (FFD) will have the right to appeal it. In order to be able to appeal the FFD, a person must provide written comments during the preliminary decision comment period. A copy of the FFD will be sent to any person who comments on the preliminary decision, and will include an explanation of the appeal process.

Background

An application was received July 13, 2016, requesting a Land Use Permit (LUP) to authorize an eddy covariance tower and a proposed power supply system that included (1) a 6 ft x 20 ft control building to house a non-spillable battery bank, 6 kW generator, 500-gallon diesel fuel tank, and solar array and (2) a 10 kW wind turbine. The proposed power supply system was to be located on the south side of the airstrip taxiway, placed on a floating dock foundation, and connect to the eddy covariance tower with 215- meter cables (Figure 2). This initial application was sent out for an agency review (Attachment C).

Comments raised during the LUP agency review from ADOT&PF, Aviation Design and ADOT&PF, Aviation Leasing addressed issues with the placement a 10-kw wind turbine adjacent to the Ivotuk airstrip. The Aviation Design group provided general guidelines for calculating safety areas around runways and height restrictions on infrastructure adjacent to airstrips:

- *Runway -primary surface/object free area will either be 500' or 250' (half the distance from centerline, either 250' or 125')*
- *Taxiway – 131' object free area (65.5' from centerline)*
- *After the object free area the Part 77 surface goes up at a 7:1 rate.*

*Calculating the clearance for a 60 tower (assuming the base of the tower is at the runway elevation) equates to (60'*7) + 125'= 545' to (60'*7) + 250' = 670'; therefore, 545' would be the absolute minimum from the runway to place a 60' object. If room/space is not an issue, ADOT&PF Aviation Design recommends the turbine to be install 670' feet from the runway.*

Comments were also received from ASRC LUP during the agency review that expressed concern with the installation of the wind turbine and proximity of the research activities to the ASRC property boundary.

A revision to the LUP application was received August 18, 2016, which removed the wind turbine from the application. The revised LUP application also moved the location of the power supply system to a location south of the eddy covariance tower that is 550 ft from centerline of the airstrip and included a 500 ft buffer from the adjacent property line. A LUP (LAS 31276) was issued to SDSU on September 20, 2016, which authorized the instrumentation and power production system, minus the wind turbine, requested for by the lease application. Due to the size of the wind turbine, the need for an in-ground foundation, and the long-term nature of its intent at this location, DMLW determined a lease is a more appropriate authorization than a renewable 5-year LUP.

Lease Discussion – ADL 420816

SDSU submitted an application to lease 6.0 acres proximal to the Ivotuk airstrip for an existing research site. SDSU, a public California state university, is eligible for a Public and Charitable lease under AS 38.05.810(a), which allows for a non-competitive lease to a state agency.

Under AS 38.05.810(a), a lease may be issued "for less than the appraised value as determined by the director and approved by the commissioner to be fair and proper and in the best interests

of the public, with due consideration given to the nature of the public services or function rendered by the applicant, and of the terms of the grant under which the land was acquired by the state." After reviewing the scientific research to be conducted and taking into consideration the benefits to the public of the data that will be produced, DMLW proposes to issue the lease at 50% of Fair Market Value (FMV).

Basic scientific research that (1) improves our general understanding and (2) may not have direct implications or immediate applied uses, such as the research conducted at the proposed lease location, is considered a public good. Using economic terminology, a public goods are benefits to society that is nonexcludable and nonrivalrous. In other words, is difficult to exclude someone access to the public good and the use of the public good does not diminish its use to other users; therefore, it is difficult to provide through the private sector and are typically provide by government services.

The research is funded by the National Aeronautics and Space Administration (NASA) Arctic-Boreal Vulnerability Experiment (ABoVE) program (https://above.nasa.gov/), a federal tax payer supported source. According to the ABoVE website:

> ABoVE is a NASA-led, 10-year field experiment designed to better understand the ecological and social consequences of environmental change in one of the most rapidly changing regions on Earth. Satellite, airborne, and ground observations across Alaska and Canada will help us better understand the local and regional effects of changing forests, permafrost, and ecosystems – and how these changes could ultimately affect people and places beyond the Arctic.

ABoVE project data is available at https://above.nasa.gov/cgi-bin/above_products.pl.

While basic science research doesn't usually provide immediate tangible benefits, data sets produced by basic science research are seen as an investment for future applied research and economic applications. Basic science, also referred to as fundamental science, expands a knowledge base that can then provide the starting point or be incorporated into applied research where the knowledge base is contextualized to a specific problem or issue at hand. While it is difficult to determine the economic benefits of scientific research, some economists such as Charles Jones and John Williams (Stanford University) have calculated the return on the investment between 30-100% (Pool and Erickson 2012)[2]. Climate science collects data that is incorporated into climate models which model changes to the landscape over the near- and long-term that help decision makers, such as DNR, understand potential future impacts on natural resources usage and the environment. Climate science also provides information that assists in mitigating risks. Additionally, since this research looks at methane fluxes, the results of the research may contribute to determining the potential for future carbon credit markets in remote areas of Alaska.

Because of the nature of the research as basic science and its role as generating data that may provide an array of benefits to the residents of Alaska, DMLW proposes to issue the lease at 50% of Fair Market Value (FMV) to support the research proposed and to also provide limited revenue to the State from the use of state land.

[2] Pool, S. and J. Erickson. 2012. The High Return on Investment for Publicly Funded Research. Available from: https://www.americanprogress.org/issues/economy/reports/2012/12/10/47481/the-high-return-on-investment-for-publicly-funded-research/

The purpose of the research site is to collect data and study carbon dioxide, water, and methane fluxes using an eddy covariance tower. Additional automated measurements taken at the site include soil temperature and moisture probes, small diameter water wells (2.5 cm in diameter and not deeper than 100 cm), and soil heat flux plates. Manual measurements at the site include permafrost thaw-depths, water table heights, and chamber measurements. A 25-year lease is requested due to the long-term nature of the research and in order to install a 10-kw wind turbine to power the instrumentation, decreasing the dependence on the diesel generator.

Currently, the power supply system in place to power the eddy covariance tower consists of multiple components in order to supply power under different conditions. The current power system is placed on platform constructed of floating dock blocks on the tundra and includes a 1500-watt (12 each of 250w panels) solar array, a fuel cell generator (EFOY ProEnergyBox 4060P), seventy-two UN2800 non-spillable lead acid batteries, and a diesel fuel generator with a 500-gallon UL142 complaint double wall tank within the control building. A 512-meter cable connects the power system to the eddy covariance tower (Attachment B).

SDSU proposes to install a 10 kw wind turbine on a 60-ft tower. The major components of the wind turbine system include the nacelle, the tower, and the blades. The nacelle weighs approximately 1335 lbs., the 60 ft. tower weighs approximately 1500 lbs., and the combined weight of all blades is approximately 295 lbs. It will be secured on a foundation using 1" x 72" anchor rods that pounded into the permafrost and a ¾" steel base plate (Attachment B).

Summer off-road travel is requested for installation of the wind turbine. The site is located within the North Slope Area Special Use Lands (11 AAC 96.10), which requires a permit for motorized vehicle use, unless that use is for subsistence purposes or is on a graveled road. Off-road travel will be authorized through the SLUP and lease stipulations.

Upon completion of the lease, SDSU will be responsible for removing all the instrumentation and the power supply system. The tundra will be left in an acceptable condition to DMLW. SDSU has submitted a provisionary dismantlement plan (Attachment D).

Lack of Classification and Issuance of a Special Land Use Permit

Per 11 AAC 55.040(i), until land has been classified, a disposal or transfer of state land or an interest in state land will not be allowed except for specific types of authorizations as outlined in the regulation. The proposed issuance of a public and charitable leases to SDSU for a research site does not meet any of the exceptions listed in regulation; therefore, the lands must be classified in order for a lease to be issued.

According to 11 AAC 55.270(2), if a regional plan is being prepared or if preparation is scheduled to begin within one year, the commissioner will defer a decision on the proposed classification and will treat the proposal as public comment on the land use plan, unless the commissioner determines that sufficient urgency exits to follow the procedures of (3) of this section.

Due to (1) the lack of classification for the land where the lease is proposed and (2) the inability to classify the land while the North Slope Management Plan is in process, DMLW is not able to issue a lease at this time. An SLUP can be issued for construction, survey, appraisal, and use of the site until a lease and public easement can be issued. The term of the SLUP will be included within the total length of the 25-year lease and easements (i.e. the term of 25 years begins when the SLUP is signed; the SLUP will not extend the length of the authorization beyond 25 years). An annual land use fee compensation (initially $1000 annual rental, and then subsequently 50% percentage of FMV rental once an appraisal has been completed and approved, shall be required

during the term of the SLUP. The annual rental shall be adjusted accordingly upon final appraised FMV determination.

Once the North Slope Management Plan is approved by the commissioner, a lease may be issued if it is allowed under the classification. Once the land is classified and eligible to be leased, DMLW intends to issue a public and charitable lease to SDSU for use as a scientific research site, contingent upon SDSU demonstrated compliance with SLUP requirements and stipulations. The SLUP will be included within the total length of the 25-year lease and easement, so that the lease and easement extend to 25-years from the issuance of the SLUP.

Public Easement Discussion – ADL 420817

SDSU submitted an application for a public easement to provide legal access to the proposed lease tract for the research site. Legal access is required for the lease, and this public easement connects the lease to the closest section line public easement, therefore providing legal access to the lease. The easement also overlays the Ivotuk airstrip, an unmanaged airstrip. When a lease is issued to SDSU, DMLW intends to also issue a public easement associated with the lease to provide legal access to the lease site. The public easement is available for 3rd party use, and SDSU is not responsible for 3rd party use or maintenance of the airstrip.

The estimate of one-time fee for public easement, based on estimated acreage with a one-time fee of $50 per acre, will be required for initial payment prior to the issuance of the easement. This amount will be adjusted accordingly, based on final acreage after survey of the easement is completed.

Restriction of Easement Appeal Eligibility Discussion

Given that the lease (ADL 420816) and public easement (ADL 420817) are contingent upon each other for the same project, and that a SLUP is proposed for issuance prior to lease, both applications were adjudicated in a single preliminary finding and decision in order to streamline the process. Additionally, the public notice for the lease, easement, and SLUP will be combined as well. In order to avoid any confusion associated with assigning separate appeal languages for the SLUP, lease, and easement, the combined public notice will contain the appeal criteria used for leases, which restricts appeal eligibility to those who submit timely written comment. Therefore, pursuant to 11 AAC 02.010 (d) the Department will also restrict the eligibility to appeal the proposed SLUP and easement to participants who have provided timely written comment during the current 30-day comment period of this combined public notice. The Director of the Division of Mining, Land and Water signed the required concurrence for this action on 6/28/2017 as directed in Department Order 139.

Recommendation

DMLW has completed a review of the information provided by the applicant and an examination of the documents and associated information related to the proposed action. This decision considers ownership of the sites and the access route, the need for classification of the land and the on-going North Slope Management Plan process, eligibility of the applicant for Public and Charitable consideration, the value of the scientific research being conducted, agency comments, and project specific needs. The use of this site for a scientific research site will improve the understanding of arctic tundra ecosystem processes in the region.

DMLW proposes to issue a 25-year Special Land Use Permit (SLUP) to SDSU for the construction, operation, and maintenance of the scientific research site and its power production system, including a 10-kw wind turbine, subject to the requirements noted above and stipulations included in standard DMLW lease conditions.

Additionally, once the land is classified and eligible to be leased, DMLW intends to issue (1) a public and charitable lease contingent upon SDSU compliance with SLUP requirements and (2) a public easement associated with the lease to provide legal access to the lease site for a length of time that extend 25-years from the issuance of the SLUP. Rent for the SLUP and Lease shall initially be $1000 annually, until such time as an appraisal is completed. Thereafter, annual rental shall be 50% of the appraised FMV. If the classification precludes the issuance of a lease under AS 38.05.810(a) for scientific research purposes, then the SLUP will continue to be the authorization for the scientific research site. Anyone interested in reviewing a copy of a standard SLUP, lease, and easement can contact the DMLW and request a copy.

I find the proposed actions may be in the State's best interest and recommend approval to proceed with public notice.

6/23/17

Kimberley Maher
Natural Resource Specialist

Date

Preliminary Decision

It is the determination of the Division of Mining, Land & Water that it may be in the State's best interest to issue a Special Land Use Permit for up to 25 years and to then issue a public and charitable lease and a public easement to SDSU once the land is classified, as recommended above. This application shall now proceed to public notice.

6/28/17

Brent Goodrum
Director, Division of Mining, Land & Water

Date

Attachments

Attachment A – Location Maps

Attachment B – Development and Operations Plan

Attachment C – LAS 31276 Adjudication Summary and LUP

Attachment D – Research Site Provisionary Dismantlement Plan

Attachment A