

Fort Knox Mine

Pedro Creek Waste Rock Dump

Preliminary Visual Impact Investigation

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Appendix A: Digital Renderings

List of Acronyms

BCWRD	Barnes Creek WRD
BLM	Bureau of Land Management
E	East
FLPMA	Federal Land Policy Management Act
FGMI	Fairbanks Gold Mining Inc.
GPS	Global Positioning System
HLF	Heap Leach Facility
KOP	Key Observation Point
Project	Fort Knox Mine
N	North
NEPA	National Environmental Policy Act
PCWRD	Pedro Creek WRD
Project	Fort Knox Mine
R	Range
SRK	SRK Consulting (U.S.), Inc.
T	Township
VRI	Visual Resource Inventory
VRM	Visual Resource Management
WCHL	Walter Creek Heap Leach
WRD	Waste Rock Dump

1 Introduction

Fairbanks Gold Mining Inc. (FGMI) contracted with SRK Consulting (U.S.), Inc. (SRK) to investigate potential impacts to visual resources related to the development of a new waste rock dump (WRD) at the Fort Knox Mine (Project). The Project is located approximately 15 air miles northeast of Fairbanks, Alaska in portions of Sections 4-5, 7-23, 26-29, 32, and 33 of Township (T) 2 North (N), Range (R) 2 East (E) and Sections 7-8 and 17-19, of T2N, R3E, Fairbanks Meridian. FGMI is proposing to develop the Pedro Creek Waste Rock Dump (PCWRD) as part of the ongoing Fort Knox Mine operations. The PCWRD will be constructed to the northeast of existing facilities at the head of the Pedro Creek watershed at elevations ranging from 1,650 to 2,430 feet above mean sea level.

2 Visual Resources Overview

The majority of the Project is located on lands for which FGMI holds surface rights while a small portion is owned by FGMI. The nearest federally-manage lands are located approximately 1.75 miles to the northwest at Cleary Summit. The Project and surrounding areas are located on private lands or lands administered by the Alaska Mental Health Trust Authority, so no visual resource management inventories have been conducted, and no procedures or visual resource management categories have been established. In the absence of other authorities, SRK has used the definitions and procedures for assessing changes to the visual landscape defined by the U.S. Department of the Interior Bureau of Land Management (BLM).

The BLM developed a standard visual assessment methodology, known as the Visual Resource Management (VRM) system, to inventory and manage scenic values on lands under its jurisdiction. Scenic value inventories are carried out through Visual Resource Inventories (VRI). This methodology was developed in response to the Federal Land Policy Management Act (FLPMA) of 1978, as amended, and the National Environmental Policy Act (NEPA) of 1969, as amended, both of which address visual resources and the need for the development of a systematic, interdisciplinary approach to VRM and assessment.

BLM (1984) *Manual 8400 – Visual Resource Management* describes the purpose and objectives of the system, as well as the contrast rating system, which has been established to assess changes in the landscape. Section .07 A. states:

The contrast rating system (Manual Section 8431) provides a systematic means to evaluate proposed projects and determine whether these projects conform with the approved VRM objectives. It also provides a means to identify mitigating measures that can be taken to minimize adverse visual impacts. The VRM system, therefore, provides a means: to identify visual values; to establish objectives through the [Resource Management Plan] process for managing these values; and to provide timely inputs into proposed surface disturbing projects to ensure that these objectives are met.”

Since the Project is not located within a land management system with established VRM classes, the contrast rating system used by the BLM will be used for descriptive purposes only; no comparisons with VRM class objectives will be made. This platform of analysis provides a structure for the description of, and comparison between, the scenarios investigated, with the means to describe those changes more definitively in terms of landscape features (landform/water, vegetation, and structures)

and elements (form, line, color, and texture). Please refer to **Section 6** for a description of additional work needed to complete this analysis.

3 KOP Selection

Visibility of the PCWRD from the surrounding areas was initially investigated by SRK using a visibility tool in ArcGIS. Relevant key observation points (KOPs) were then selected within areas identified as being visible from the highest bench of the proposed WRD, focusing on locations where changes to visual resources are anticipated to be perceptible by local populations and/or viewers along travel routes. The visibility results, and the chosen KOP locations, are shown on **Figure 1**. Areas shown in orange indicate areas visible from the PCWRD. The rationale for selection is as follows:

- KOP-1 is located along the Steese Highway at the point where Pedro Creek flows into the drainage flowing south from the Fort Knox Access Road. KOP-1 represents the view of a traveler driving north from the town of Fox.
- KOP-2 is located at the base of the Ski Land and Snowboard Area. This KOP represents views of people recreating at this facility.
- KOP-3 is located along the Fort Knox Access Road. While the public cannot access this viewpoint, it is an informative location with clear visibility of the PCWRD.
- KOP-4 is on a high point near the Cleary Summit Overlook and the Aurora Borealis Lodge. This KOP represents the view of residents and visitors to this area.

4 Methodology

4.1 Digital Renderings

A visual simulation is a realistic visual portrayal which demonstrates the perceivable changes in landscape features caused by a proposed management activity (BLM, 1984). Existing viewshed characteristics and visual simulations are best developed using high-quality photographs collected from each KOP. For this latitude, photograph collection should occur after the leaves have fallen from the trees and before snowfall, to mimic conditions under which the highest visual impacts may occur.

Photograph collection from each KOP is scheduled to occur between April and June 2026. Once photographs have been collected, the baseline viewsheds will be revisited, simulations will be constructed, and contrast ratings will be completed in accordance with BLM *Manual 8431 – Visual Resource Contrast Rating* (BLM, 1986a).

For this preliminary visual impact investigation, baseline viewshed descriptions have been informed by Google Earth photographs. Digital renderings of authorized and proposed facilities have been developed using ArcMap imagery and facility contours. Authorized facility contours and the proposed PCWRD contours were provided by FGMI. The contours were converted into surfaces which were then exported to Autodesk® 3ds Max for light and texture adjustments. The digital imagery used for the renderings is a composite from ArcMap. Artificial Intelligence was utilized to make the foreground imagery appear more realistic. It is likely that the foreground vegetation in these areas would actually be thicker and have a greater shielding effect than what is shown.

4.2 Scenarios

The scenarios used in this analysis include:

- **Existing Viewshed** – This scenario presents the current viewshed from each KOP. Existing viewshed descriptions were informed by Google Earth photographs in the absence of location-specific photographs collected from each KOP.
- **Post-Mining Scenario** – The Post-Mining scenario includes renderings of authorized facilities, namely the Walter Creek Heap Leach (WCHL) and Barnes Creek WRD (BCWRD) as well as the simulated PCWRD at the point of full-buildout, prior to regrading and revegetation.
- **Post-Reclamation Scenarios** – The post-reclamation scenarios show how the PCWRD and other authorized facilities would look after regrading and reseeding with approximately 30 and 48 years of vegetation establishment on the reseeded areas. Established post-reclamation vegetation coverage, texture, and color was informed by photographs of similar revegetated areas from the True North Project, a FGMI project located approximately 26 miles northeast of Fairbanks which was closed in 2004.

4.3 Contrast Descriptions

The contrast rating system is a systematic process used by the BLM to analyze potential visual impacts of proposed projects and activities. The basic philosophy underlying the system is that the degree to which a management activity affects the visual quality of a landscape depends on the visual contrast created between a project and the existing landscape. The visual contrast can be measured by comparing the project features with major features in the existing landscape. The basic design elements of form, line, color, and texture are used to make this comparison, and to describe the visual contrast created using *Form 8400-4 – Visual Contrast Rating Worksheet* (BLM, 2018), and as described in *Manual 8431 – Visual Resource Contrast Rating* (BLM, 1986a).

For the purposes of this preliminary investigation, the scenarios from each KOP are described using the general contrast rating system terms, but contrast rating have not been assigned. This task will be completed using visual simulations after photographs have been collected.

5 Preliminary Results

A description of each scenario is provided below by KOP. These descriptions will be refined once simulations have been completed using KOP site-specific photographs. Digital renderings are included in **Appendix A**.

5.1 KOP-1

5.1.1 Overview

KOP-1 represents the view of a traveler driving north along the Steese Highway from Fox. The proposed PCWRD is located approximately two miles northeast from KOP-1, up the Pedro Creek drainage to the right, north of the Pedro Monument Historical Point. The Post-Mining Scenario and Post-Reclamation Scenario renderings are shown on images 1 through 3 of **Appendix A**.

5.1.2 Existing Viewshed

In the absence of summer foliage, the KOP-1 viewshed, beyond the trees alongside the road, is dominated by foreground and middle-ground rolling to gently sloped hills which form simple domed forms. The hills form sloped silhouette lines against the horizon and each other with some faint lines created by vegetation edges which change seasonally, becoming more pronounced during the winter. The Steese Highway creates banded lines curving to the left, guiding the viewer's eyes away from the Pedro Creek drainage.

The dominant colors and texture change with the seasons:

- In summer, the view is dominated by uniformly textured medium chroma greens to blues;
- In the fall, the colors change to a blend of warm greens to ruddy oranges stippled with darker shapes created by individual and groups of evergreen trees;
- In the winter, snow and ice create light gray and white surfaces on the ground with the potential for reflectivity, stippled with low value warm green shapes created by individual and groups of evergreen trees; and
- In the early spring, low chroma gray and brown landforms are stippled with low value warm green shapes.

5.1.3 Post-Mining Scenario

The PCWRD would appear as a geometric, flat-topped feature at the head of the Pedro Creek drainage. Depending on the light, this feature may appear angular to subangular, with linear to diagonal lines formed by shadows on the bench faces. During the summer months, butt edges would be created by the midground vegetated slopes against the high value, light-colored earth material of the dump. During the winter and early spring, the PCWRD would blend in more with the low-chroma whites and grays of the ground surface, reducing the butt edge effect created against the summer and fall vegetation.

5.2 KOP-2

5.2.1 Overview

KOP-2 is located at the base of the Ski Land and Snowboard Area. This KOP represents views of people recreating at this facility when they are on the eastern side of the property. It should be noted that the ski slopes are located on north-west facing slopes with no visibility of the Project. The proposed PCWRD is located approximately 1.6 miles to the south-southeast of KOP-2. The Post-Mining Scenario and Post-Reclamation Scenario renderings are shown on Images 4 through 6 of **Appendix A**.

5.2.2 Existing Viewshed

The view from KOP-2 is dominated by the wide-open horizon over rolling to subangular hills. Hill slopes form shallow diagonal lines to the left and an access road to the left creates a linear feature in the otherwise intact vegetation. The existing WCHL appears as a flat-topped, geometric form above the natural horizon. Benches on the WCHL create horizontal lines and shifting diagonal shadows depending on the time of day. The colors and textures are generally the same as those described for KOP-1 with the exception of the WCHL which is a high value, low chroma, tan to white feature with the potential for reflectivity, showing visible striations under certain conditions.

5.2.3 Post-Mining Scenario

The PCWRD would appear as a geometric, flat-topped feature to the right of the WCHL. While the PCWRD would be lower in elevation than the WCHL, its flat top would extend out about twice as wide as the visible portion of the WCHL, creating a flat silhouette edge with a diagonal cut to the right on the horizon. The PCWRD would repeat the colors and textures of the WCHL. During the winter and early spring, the PCWRD would blend in more with the low-chroma whites and grays of the ground surface, reducing the butt edge effect created against the summer and fall vegetation.

5.3 KOP-3

5.3.1 Overview

KOP-3 is located along the Fort Knox Access Road. While the public cannot access this particular viewpoint, it is an informative location with clear visibility of the PCWRD. The proposed PCWRD is located approximately 1.2 miles to the southeast of KOP-3. The Post-Mining Scenario and Post-Reclamation Scenario renderings are shown on Images 7 through 9 of **Appendix A**.

5.3.2 Existing Viewshed

The view from KOP-3 is dominated by rolling to subangular hills sloping mostly toward the right. The existing WCHL appears as a flat-topped, geometric form above the natural horizon to the left while the BCWRD appears as a similar geometric shape toward the center of the view. Benches on the WCHL and BCWRD create horizontal lines and shifting diagonal shadows depending on the time of day. The colors and texture are generally the same as those described for KOP-2.

5.3.3 Post-Mining Scenario

The PCWRD would appear as a geometric, flat-topped feature in between the WCHL and BCWRD, creating a flat line with a few geometric steps between the two existing features. A prominent diagonal, geometric line would be created between the PCWRD material and the existing vegetation on the southern wall of the Pedro Creek drainage. The PCWRD would repeat the colors and textures of the WCHL and BCWRD. During the winter and early spring, the PCWRD would blend in more with the low-chroma whites and grays of the ground surface, reducing the butt edge diagonal line effect created against the summer and fall vegetation.

5.4 KOP-4

5.4.1 Overview

KOP-4 is on a high point near the Cleary Summit Overlook and the Aurora Borealis Lodge and represents the view of residents and visitors to this area. The proposed PCWRD is located approximately 2.3 miles to the southeast of KOP-4. The Post-Mining Scenario and Post-Reclamation Scenario renderings are shown on Images 10 through 12 of **Appendix A**.

5.4.2 Existing Viewshed

The view from KOP-4 is dominated by rolling to subangular hills sloping gently to the right and left. The Fort Knox access road creates a banded line in the vegetation, sloping gently up and to the right. The existing BCWRD appears as a flat-topped, geometric form above the natural horizon to the right.

Benches on the BCWRD create faint horizontal lines and shifting diagonal shadows depending on the time of day but these details are obscured by the distance. The colors and texture are generally the same as those described for KOP-3.

5.4.3 Post-Mining Scenario

The PCWRD would appear as a geometric, flat-topped feature butting against a midground hillside and the BCWRD. The PCWRD form would create flat line with a few geometric steps between the two existing features. A prominent, diagonal, geometric line would be created between the PCWRD material and the existing vegetation on the southern wall of the Pedro Creek drainage. The PCWRD would repeat the colors and textures of the BCWRD but would be much more prominent. During the winter and early spring, the PCWRD would blend in with the low-chroma whites and grays of the ground surface, reducing the butt edge diagonal line effect created against the summer and fall vegetation.

5.5 Post-Reclamation Scenarios for all KOPs

Digital renderings for the post-reclamation scenarios have been projected out approximately 30 years and 48 years as indicated in the images developed for each KOP in **Appendix A**. The post-reclamation renderings show the establishment of vegetation on the PCWRD as well as on the existing WCHL and the BCWRD. The post-reclamation vegetation colors and textures added to the renderings have been informed by imagery from nearby reclaimed projects in the area, including, but not limited to the True North Project located approximately 5.5 miles to the northwest.

During reclamation, benches would be graded out, removing the horizontal lines and potential for diagonal shadows along the bench faces. The post-reclamation renderings indicating Year 2064 for each KOP show the establishment of soft green, leafy, primarily deciduous vegetation, stippling the high value earthen form of the PCWRD with medium chroma greens in the summer. This vegetation stippling would change to a blend of warm greens and ruddy oranges in the fall. During the winter, the lack of foliage would allow the form of the PCWRD to be more easily seen again, but the ground surface would blend in slightly with the surrounding gray and white ground surfaces of the adjacent hills. Butt edge lines may still be visible against areas covered in darker evergreen vegetation.

The post-reclamation renderings indicating Year 2080 for each KOP show the establishment of darker green evergreen vegetation mixed in with the soft green deciduous vegetation. The vegetation appears less stippled and smoother, blending with the existing vegetation of the surrounding hillsides. This vegetation stippling would change to a blend of warm greens and ruddy oranges in the fall. During the winter, the lack of foliage may still allow the form of the PCWRD to be seen but this would continue to decrease as evergreen vegetation takes hold.

6 Additional Work

Photographs will be collected from each KOP between April and June 2026. The KOP locations may be adjusted slightly at that time for optimum visibility around vegetation. To capture the viewshed that best approximates the human eye, a series of baseline photographs will be collected using a high-resolution digital camera. Photographs will be taken along the horizon, with each subsequent photograph overlapping the previous by a minimum 30 percent. The photographs will be combined into one panoramic image using Adobe Photoshop® software with corrections made, as needed, for perspective and distortion etc.

The stitched photographs will be used to refine the viewshed descriptions provided in this preliminary report. Then, the proposed PCWRD contours will be brought into Autodesk® 3ds Max to perform camera matching, lighting, texturing, and rendering. Camera matching will be guided by the general area topography as well as information obtained from the raw photograph metadata (lens info), and the Global Positioning System (GPS) location of the vantage point.

Rendered images of un-constructed mine facilities will be composed using Adobe Photoshop®, where all final graphic adjustments will be made (e.g., exposure, hue, and contrast). This process will be informed by the surrounding landscape colors and textures (such as exposed dirt and existing vegetation), the form angles in relation to the light source, and distance from the observer.

Visual contrast ratings will be completed for each KOP and scenario using *Form 8400-4 – Visual Contrast Rating Worksheet* (BLM, 2018), and as described in *Manual 8431 – Visual Resource Contrast Rating* (BLM, 1986a). Visual contrast rating results will be provided in a separate final report.

7 References

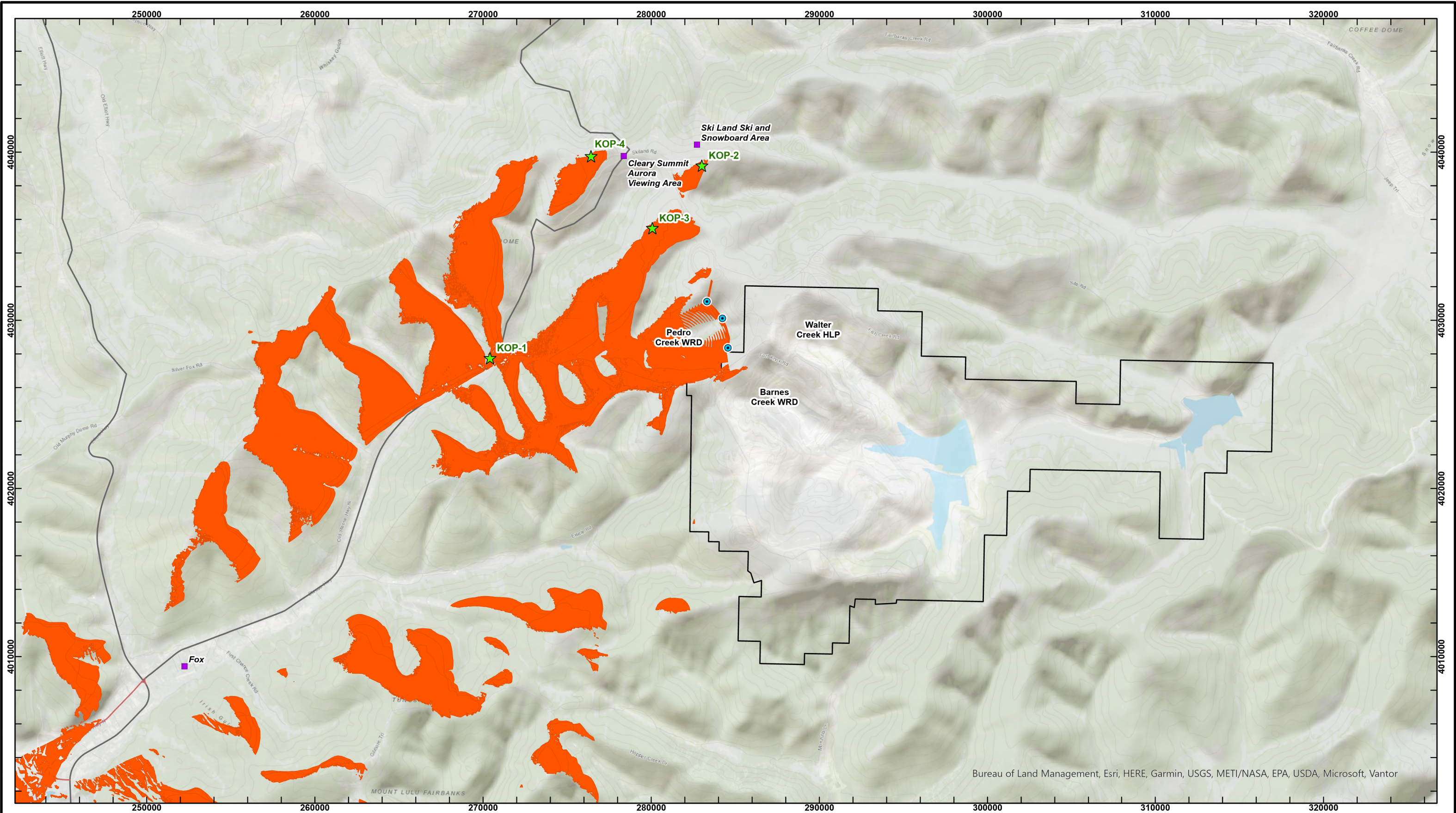
BLM. 2018. *Form 8400-4 – Visual Contrast Rating Worksheet*. June 2018.

BLM. 1986a. *Manual 8431 – Visual Resource Contrast Rating*. January 17, 1986

BLM. 1986b. *Manual H-8410-1 – Visual Resource Inventory*. January 17, 1986.

BLM. 1984. *Manual 8400 – Visual Resource Management*. April 5, 1984.

Figures



KINROSS Fort Knox

Issued For:
Fort Knox Mine Pedro Creek WRD
Preliminary Visual Impact

Visibility Results and KOP Locations

Figure 1

Date: January 2026

LEGEND:

- ★ KOP Location
- Visibility Investigation Points
- FGMI



1" = 1 miles



NAD 1927 StatePlane Alaska 3 FIPS 5003

****Fort Knox Project Boundary and Facility Disturbance for display purposes only****

Appendix A: Digital Renderings

Image 1: View from KOP1 – Post-Mining Year 2033

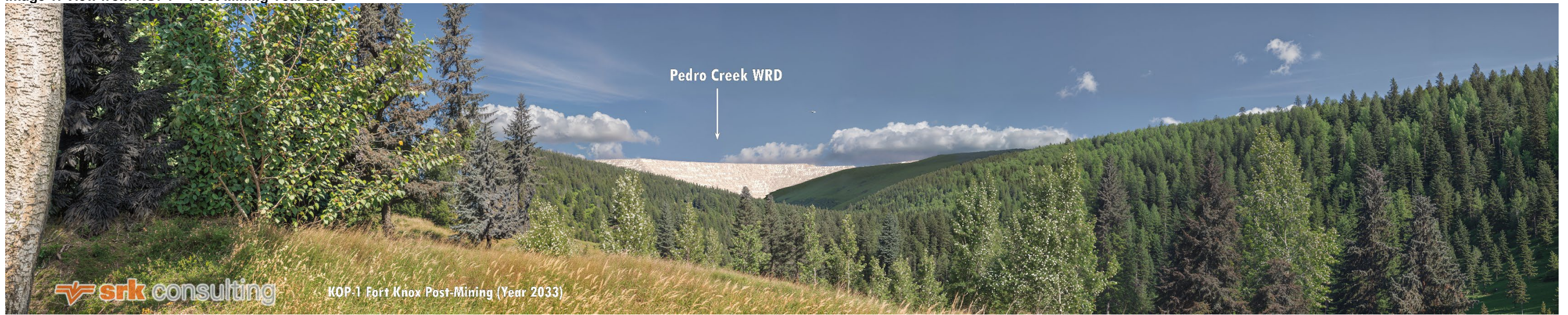


Image 2: View from KOP1 – Post-Reclamation Year 2064

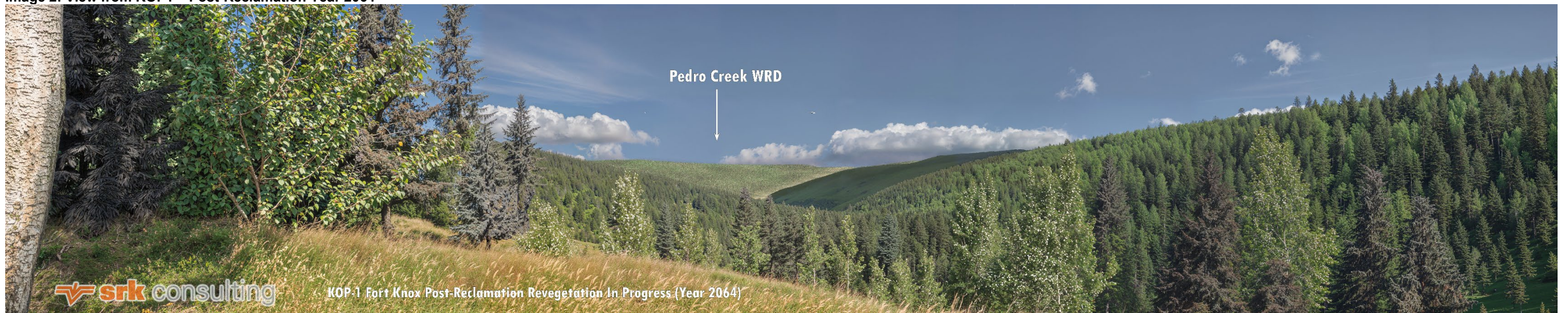


Image 3: View from KOP1 – Post-Reclamation Year 2080

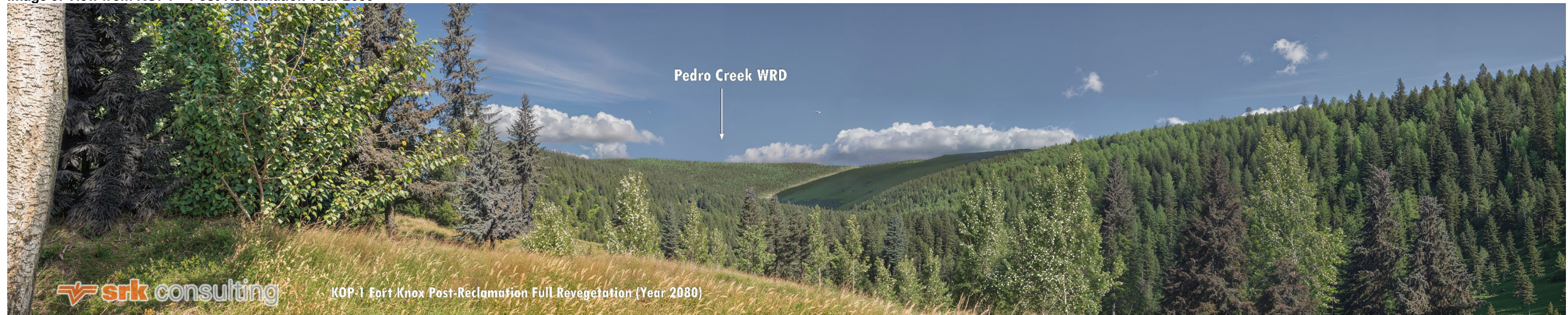


Image 4: View from KOP-2 – Post-Mining Year 2033

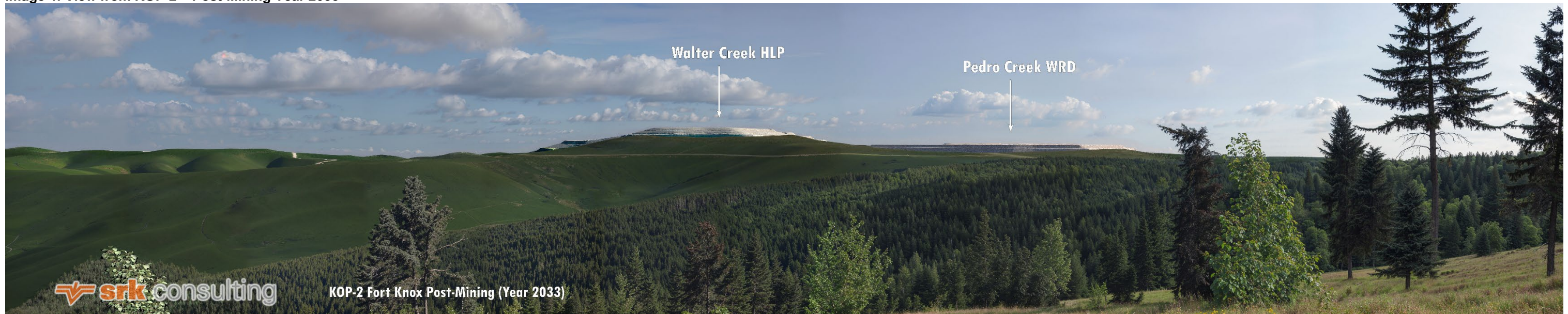


Image 5: View from KOP-2 – Post-Reclamation Year 2064

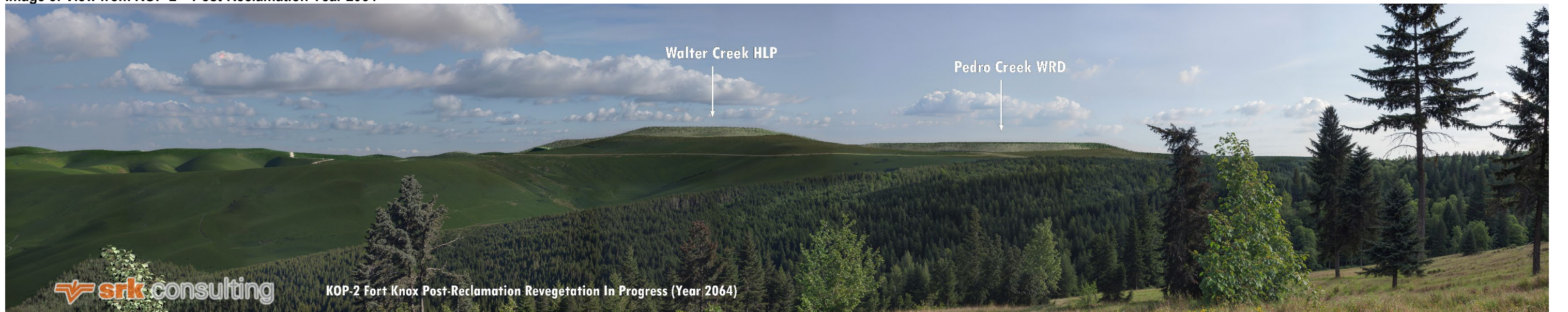


Image 6: View from KOP-2 – Post-Reclamation Year 2080

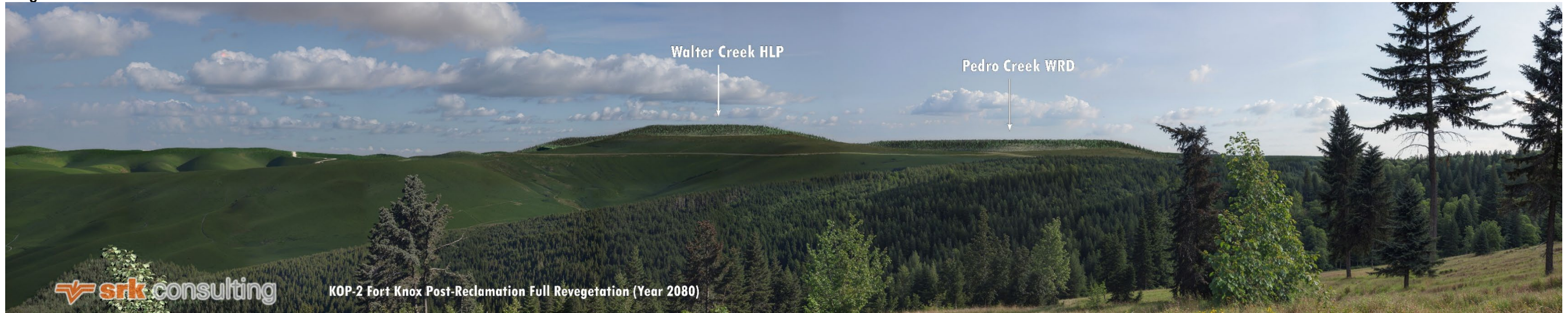


Image 7: View from KOP-3 – Post-Mining Year 2033

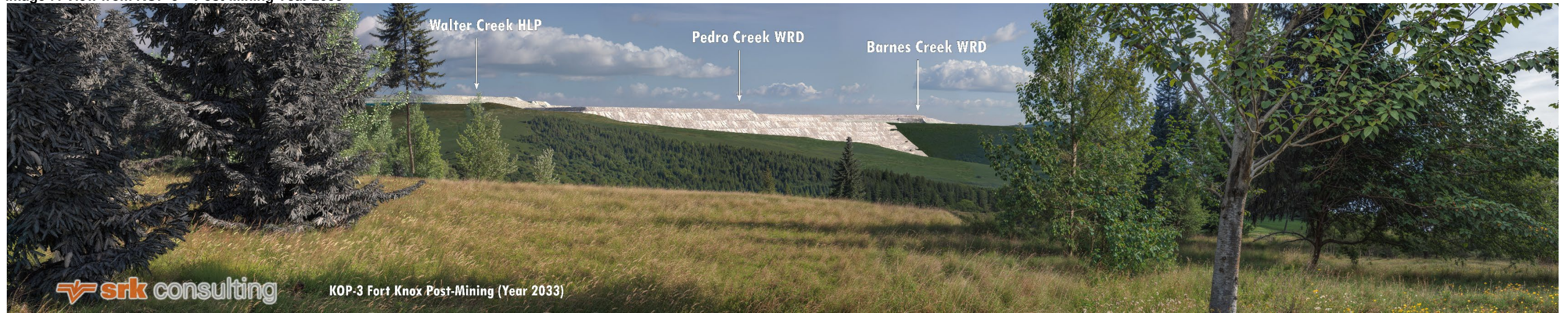


Image 8: View from KOP-3 – Post-Reclamation Year 2064

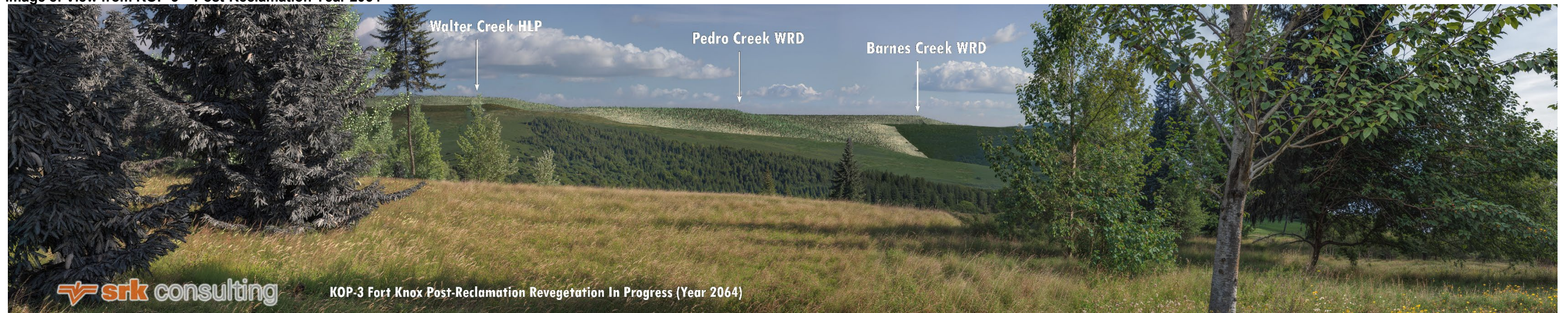


Image 9: View from KOP-3 – Post-Reclamation Year 2080

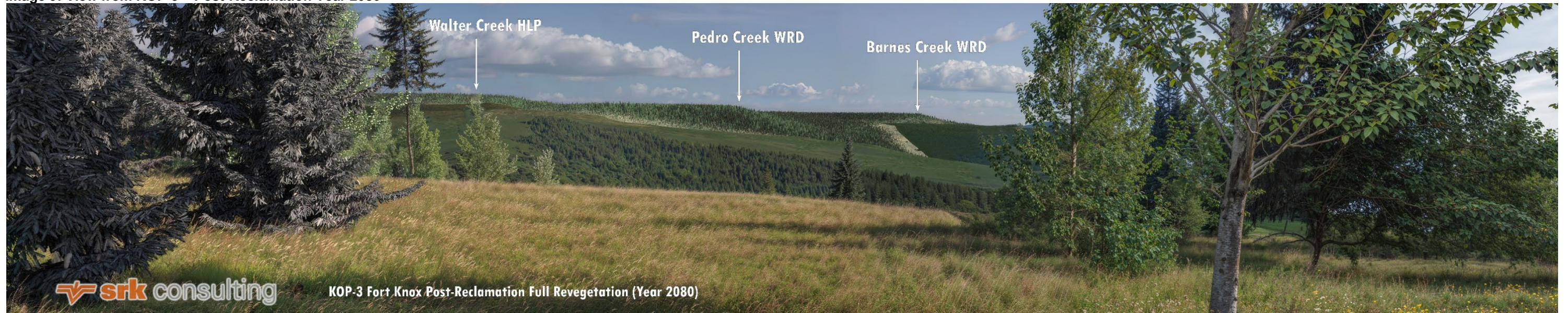


Image 10: View from KOP-4 – Post-Mining Year 2033



Image 11: View from KOP-4 – Post-Reclamation Year 2064

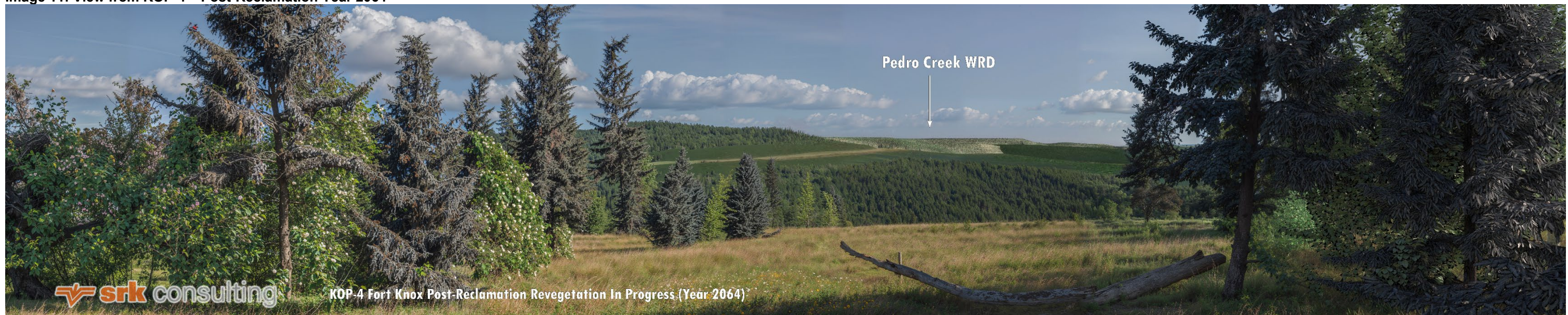


Image 12: View from KOP-4 – Post-Reclamation Year 2080

