MEMORANDUM

DATE: November 13, 2024

TO: Alan Goldich, Senior Planner, Routt County

FROM: Torie Jarvis, Sullivan Green Seavy Jarvis LLC
Ashley Bembenek, Alpine Environmental Consultants LLC
Consultants to the Northwest Colorado Council of Governments

RE: **Review of Trapper Solar Application for Consistency with NWCCOG Regional Water Quality Management Plan**

This memorandum analyzes the Application for the proposed Trapper Solar Project for consistency with the NWCCOG Regional Water Quality Management Plan, as required in Section 3.1.L. of the Routt County Unified Development Code (UDC).

In summary, NWCCOG finds that the Trapper Solar Project, as proposed in its Application, is not consistent with the NWCCOG Regional Water Quality Management Plan but offers recommendations to potentially bring the Application into conformance.

I. Trapper Solar Proposal

RWE Solar Development, LLC (RWE) is applying for a Routt County Special Use Permit to construct the Trapper Solar Project (Project), which includes up-to-250-megawatt (MW) alternating current utility-scale solar energy system and an up-to-125-MW (4-MWhour storage energy capacity) battery energy storage system (BESS) and ancillary facilities.

According to the Special Use Permit Application Written Narrative:

> The Project area would be located on approximately 3,030 acres in Sections 19–22 and 26–30, Township 6 North, Range 88 West. Approximately 1,658 acres within the proposed Project area consists of land owned by the Colorado State Land Board, and the remaining approximately 1,373 acres consists of privately owned land. Project components would include solar panels mounted on trackers arranged in multiple arrays, transformers, direct current to alternating current inverters, a collection system that connects the arrays to the BESS, a substation, an operations and maintenance building, and a switchyard. Surface-disturbing activities, including grading, would be required to allow for the development of the Project.

> Operational activities, namely mowing vegetation and cleaning of the solar panels, may be required for routine maintenance. Other facilities in the Project area would include two temporary construction laydown yards as temporary staging areas for panels and other equipment, temporary parking areas, and private gravel access roads. The Project footprint is approximately 1,536 acres of permanent impact and 17 acres of temporary impact (Table 1). The total solar panel coverage (i.e., the area that would be covered by solar panels when the panels are oriented parallel to the land) is approximately 384 acres (221 acres on private land and 163 acres on state land).

The Written Narrative also summarizes the following stages of the Project:

Construction: Project construction is expected to last approximately 18 months, from July 2026 to December 2027. Surface-disturbing activities, including grading, would be required to allow for the development of the Project.

The maximum truck weight anticipated on the haul route during construction is 85,000 pounds. The maximum number of daily trips during construction would consist of approximately 600 passenger vehicle trips per day, 12 semi-tractor/trailer trips per day, 20 water truck trips per day, and 12 grading equipment trips per day.

Operation/ Maintenance: Operational activities, namely mowing vegetation and cleaning of the solar panels, may be required for routine maintenance. The estimated project life is 35 years, from Dec. 2027 – Dec. 2062. During Project operation, the maximum truck weight on the haul route would be 85,000 pounds, and the estimated frequency of trips would be 12 passenger vehicles per day and one semi-tractor per month.

Decommissioning: Decommissioning is expected to start at the earliest in 2062. It generally involves the removal of all solar equipment, roads, and project infrastructure.

II. NWCCOG 208 Plan Background

Section 208 of the Clean Water Act provides for the creation of regional water quality management plans for coordinated regional approaches to water quality management.[1] A regional water quality management plan is also referred to as a "208 Plan."

The Northwest Colorado Council of Governments ("NWCCOG") is the designated regional water quality management agency responsible for water quality planning in Region 12 (Eagle, Grand, Jackson, Pitkin, Routt, and Summit Counties). The primary goal of this Regional Water Quality Management Plan is to protect existing water quality and

[1] 33 U.S.C. § 1288.

designated uses in the waterbodies of the region. NWCCOG reviews development Applications for consistency with the 208 Plan when a local government has incorporated such a standard into its regulations.

Routt County requires consistency with the 208 Plan in Section 3.1.L. of the UDC, stating "All development shall demonstrate compliance with the Northwest Colorado Council of Governments' (NWCCOG) Regional Water Quality Management Plan ("208 Plan") . . ."

To be consistent with the 208 Plan, development Applications must be consistent with the policies enumerated in Volume 1 of the 208 Plan.[2]

III. Trapper Solar Analysis

The following is an analysis of whether and to what degree the Project is consistent with the applicable policy from the 208 Plan, Policy 3, "Land Use and Disturbance," which reads:

> *Water quality, including wetlands, floodplains, shorelines, and riparian areas, must be protected from land use and development so that significant degradation of water quality is prevented.*

To understand regional water quality implications, the Application needs to more fully quantify area, volume, and rate calculations throughout the Application. In some instances, the rationale for using such quantities requires further explanation. The memo highlights several examples where information is incomplete or without sufficient rationale. However, these comments do not address each metric that could benefit from further refinement.

The proposed Trapper Solar Application **currently does not** meet Policy 3 because of concerns related to impacts to water quality, the sufficiency and effectiveness of stormwater controls, the water quality impacts of waterbody crossings and riparian encroachment, and the control of fugitive dust emissions. This section identifies additional information or analysis required from the Applicant and offers potential recommendations to bring the Application into compliance with the 208 Plan.

A. Water Quality Impacts and Mitigation

To ensure that the impacts of land use and development do not cause significant water quality degradation, the Application must:

- characterize existing conditions,
- identify projected impacts,
- determine appropriate mitigation measures, and
- As appropriate, propose ongoing monitoring to ensure water quality is protected.

[2] NWCCOG Regional Water Quality Management Plan, 2012, Volume 1: Policy Plan, https://www.nwccog.org/wp-content/uploads/2015/04/Vol-1_Policy-Plan-2012-208-Plan.pdf.

Currently, the Application does not fully address this rubric.[3]

In September 2022 "SWCA delineated approximately 19.25 acres of wetlands and 23.50 acres of non-wetland waters within the Project area. All delineated wetlands and OHWM waterbodies, except for WB08, appear to have a regular, unbroken hydrologic connection to Dry Creek, which runs into the Yampa River".[4] As of October 2024, the project area has increased by nearly twenty percent from 2,572 acres to 3,030 acres.

Recommendation A.i. Applicant should provide a description of the wetlands and waterbodies added to the project area since the Biological and Aquatic Resources Inventory Report was completed in September 2022.

Recommendation A.ii. The Applicant should provide a description of all existing water quality conditions (referred to as "baseline conditions") in Dry Creek and its tributaries and the Yampa River downstream from the confluence with Dry Creek. This information should be readily available from the Water Quality Control Division and existing studies such as the Yampa Integrated Water Management Plan, Upper Yampa River Watershed Plan, and other state, federal, and local studies. However, in some instances the applicant may find it most appropriate to conduct pre-application monitoring. The analysis of existing water quality conditions may include, for example:

- A characterization of the current concentration of the pollutant(s) in surface water bodies for any pollutants that may be introduced by Project.
- Stream segments and water bodies that have been recommended by any local, state, or federal agency or watershed organization for restoration or improvements.
- Stream segments and waterbodies that are impaired, including any segments listed on the Colorado Water Quality Control Division's List of Impaired Waters or Monitoring and Evaluation List (5 CCR 1002-93.

The Applicant should then discuss projected water quality impacts from the Project including whether the Project will exacerbate existing water quality problems.

Recommendation A.iii. The Application should analyze whether and to what extent the Project will impact designated uses and water quality standards for waterbodies and riparian areas both in the Project area and downstream of the Project boundary. The Colorado Water Quality Control Commission designates uses and assigns both narrative and numeric water quality standards to waterbodies in the Yampa River Basin

[3] The Erosion and Sediment Control Plan (Appendix E) acknowledges that inspections will be required to comply with CDPHE's Stormwater Construction Permit. These requirements may not be sufficient to evaluate projected water quality impacts associated with the proposed project.

[4] Biological and Aquatic Resources Inventory Report for the Trapper Solar Project, Routt County, Colorado at page 13.

in Regulations 33 and 31. Existing and potential water quality impairments are identified in Regulation 93.

Recommendation A.iv. The Applicant should provide mitigation measures to address the projected water quality impacts. The mitigation measures must be sufficient to demonstrate no significant degradation of water quality to demonstrate compliance with the 208 Plan and with Section 2.77.D.13.a. of the County UDC.

Recommendation A.v. The Application should recommend appropriate locations, frequencies, and durations for water quality monitoring, including regularly reporting results to the County. The monitoring plan should include actions the Applicant will take if monitoring results indicate proposed mitigation is not working as predicted to ensure regional water quality is not degraded.

B. Stormwater: Concerns Related to Soils

The Stormwater and Water Quality Plan (Appendix F) proposes decompaction to reduce soil bulk density within the project area as a primary runoff and erosion control measure. While this approach is consistent with PV-SMaRT, the Applicant did not use up-to-date solar array designs or fully assess the unique characteristics of the project area as recommended by PV-SMaRT.

Salt crusts were observed at multiple locations during the Biological and Aquatic Resources Survey. Further, the soil survey identifies saline, saline-sodic, or shallow soils that may require additional mitigation measures to control runoff and erosion over both the short and long-term.

Soil bulk density increases with soil depth due primarily to increased organic matter content near the soil surface and compaction from the weight of overlying materials. Appendix C of the Stormwater and Water Quality Management Plan (Appendix F) assumes that decompaction activities will create a uniform soil bulk density throughout the soil profile. While this may be possible immediately following careful execution of decompaction protocols, it is unclear whether vegetation can be established quickly enough to maintain low soil bulk density. The proposed mitigation activity, shallow decompaction, may be insufficient to establish more deeply rooted vegetation.

Finally, the Stormwater and Water Quality Management Plan lacks a detailed soil monitoring program.

Recommendation B.i. Appendix C of the Stormwater and Water Quality Plan computes the runoff curve number (RCN) based upon a panel spacing of 25 feet. The Solar Structure Detail Drawings that the Applicant recently submitted to the County reports a panel spacing of 21’6”. The Applicant should incorporate the new information into the Application.

Recommendation B.ii. The Applicant should more fully describe the current condition of the vegetation on-site and how the proposed post-project vegetation type is the best option for revegetation. The Applicant should also describe how the Decommissioning Plan will be responsive to changing conditions that might necessitate changes in the Plan, including how the county will review and approve of such changes.

Recommendation B.iii. Appendix D of the Stormwater and Water Quality Plan helpfully provides the RCN by solar field. Appendix D appears to indicate that additional erosion control measures could be most beneficial in solar fields F, H, and I. The Applicant should address whether and to what extent there is a need for additional erosion control measures during construction, operation, and decommissioning of the project.

Recommendation B.iv. The Applicant should address whether additional erosion control measures may be necessary due to shallow soil depths, in particular soil unit 5a, 4e, and 4F which account for approximately 20.5 percent of the project area.

Recommendation B.v. The Application should address whether additional erosion control measures may be necessary due to soil chemical characteristics (e.g., saline, saline-sodic).

Recommendation B.vi. The Applicant should develop a monitoring plan that includes monitoring locations, frequencies, and duration for pre-project, construction, operation, decommissioning, and post-project. The monitoring program should include soil bulk density measurements, at a minimum, to demonstrate consistency with Routt UDC at Section 2.77.D.13.a. It may also be necessary to include soil chemistry metrics to ensure successful revegetation and prevent the accumulation of excess salts within the soil profile. Finally, a monitoring program should include reporting to the County and benchmarks that trigger additional mitigation if desired benchmarks are not attained.

Recommendation B.vii. Should the County approve the project, it should consider requiring the Applicant to conduct a monitoring program and identify specific benchmarks to trigger adaptive management responses as conditions of approval.

C. Stormwater: Concerns Related to Traditional Erosion Control Measures

The Stormwater and Water Quality Plan lacks a complete analysis of project-specific estimates of stormwater flows from solar panels, roads, snow storage areas, and other impermeable areas during the construction, operation, and decommissioning of the Project. The Application should then outline project-specific measures to retain stormwater onsite. These steps are necessary to project the impact and evaluate whether the proposed

mitigation measures are sufficient to protect water quality in the project area and downstream waters.

The Stormwater and Water Quality Plan lacks information about how stormwater management on haul routes may impact water quality during construction, upgrades, ongoing maintenance, or decommissioning.

The Application includes several maintenance activities (e.g., road maintenance, snow storage) that have the potential to affect water quality during operation of the project. The Applicant reported that they do not anticipate being subject to a CDPHE stormwater permit during the operation phase, so the Applicant should identify these ongoing maintenance activities and describe predicted impacts and mitigation in the County Application.

> Recommendation C.i. Applicant should provide a description of how erosion control measures will prevent stormwater from entering waterbodies. The Application proposes silt fences, super silt fences, and some classic "BMPs." However, there is little to no project-specific information on predicted stormwater runoff quantity and whether the proposed erosion control measures are adequate for projected flows from storm events.
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> Recommendation C.ii. The Erosion Control Plan generally includes erosion control measures on the perimeter of the project area. The plan lacks erosion control measures to prevent runoff and erosion from disturbed areas from entering undisturbed areas within the project area. Appropriate erosion control measures should be added to the plan.
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> Recommendation C.iii. The Erosion Control Plan should be consistent with the requirements of the State's construction stormwater permit, except where additional more stringent requirements are established by the County. For example, the State's construction stormwater permit typically requires temporary stabilization to occur where "ground disturbing construction activity has…. temporarily ceased for more than 14 calendar days" unless a specific exemption applies. In contrast, the Erosion Control Plan includes the following directive "Apply temporary seed and mulch to exposed areas where activity is not anticipated for 30-days." The Application should match the State permit requirements or provide a rationale for why exemptions might apply.
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> Recommendation C.iv. Applicant should describe proposed stormwater management from both haul roads and newly constructed on-site access roads including a discussion of energy dissipation or flow management in the roadside ditches. The description should include any anticipated stormwater upgrades necessary on haul roads due to increased usage and/or required road improvements and/or why such upgrades are not necessary based on projections of

stormwater movement on the haul roads. The Applicant should also identify a reporting process and provide reports to the County at least annually. If this information will be provided later or through other plans, the County should consider a condition requiring sufficiency of future plans in addressing stormwater runoff from roadways.

Recommendation C.v. The Applicant to identify a process for inspecting and monitoring erosion and sediment control measures at specified times. The CDPHE Stormwater Management Plan may be sufficient to meet this requirement. At minimum, the Applicant should deliver inspection/monitoring results to the County no less than annually.

Recommendation C.vi. The County should require the Applicant to provide the Planning Director with a copy of the Project's certification under the CDPHE stormwater construction discharge permit and the Project's Stormwater Management Plan before any surface disturbance occurs on the site before construction and decommissioning.

D. Stream Crossings, Haul Routes/ Access Roads, and Waterbody and Riparian Encroachments.

The Application does not provide information on the applicability of the outer setbacks from named waterbodies nor any overarching analysis of whether and to what degree the Project may degrade Routt County's riparian resources as required in Section 2.77.D.13.a. of the County UDC.

In particular, the Application identifies two stream crossings[5] through wetlands and across waterbodies.

The first, between solar sites G and H on Sheet 3.6 of the Site Plan, appears to be a new crossing but the Application offers no information about why the crossing was unavoidable or sited in a manner that would least degrade water quality. The second crossing, between solar fields G and H on Sheet 3.6 of the Site Plan, appears to be an existing crossing that traverses a stream and wetlands. The Application provides no information about whether any upgrades are necessary to this existing road and the degree to which upgrades might impact the quality of the impacted waterbodies.

The Application does not discuss how the construction and maintenance of haul routes and access roads may impact water quality, riparian areas, or wetlands during construction, upgrades, ongoing maintenance, or decommissioning of haul routes.

[5] To the Applicant's credit, it appears the Project has been sited to minimize stream crossings.

Recommendation D.i. The Application should describe whether any of the criteria for the outer waterbody setback contained within section 3.31.D.2.b.ii of the UDC occur within 100' of unnamed waterbodies and within 200' of Dry Creek, Stokes Gulch, Dill Gulch, and Temple Gulch.

Recommendation D.ii. The Application should describe any instances where the 50-foot setback from unnamed waterbodies and wetlands or the 150-foot setback from Dry Creek may degrade the quality of the riparian area or wetlands and any mitigation that will be conducted to address the identified impacts to those riparian areas and wetlands.

Recommendation D.iii. The Applicant should address the site design and water quality impacts of the two stream crossings including:

- how the waterbody crossings were chosen in the Site Plan,
- what upgrades will be necessary for the existing stream crossing,
- whether any alternative locations of the crossings would be less impactful on waterbodies,
- why those alternatives were not feasible, and
- proposed mitigation measures to protect the quality of the waterbodies.

The Applicant should also address the operation and maintenance for the stream crossings, including:

- estimates of how often the stream crossings will be utilized,
- measures to avoid utilizing the stream crossings during the operation of the project, and
- any proposed mitigation to reduce impacts of the stream crossings during Project operation and maintenance.

Recommendation D.v. The Applicant should explain how haul routes will be constructed, improved, maintained, or reclaimed in a manner protective of water quality, riparian habitat, wetlands, and other waterbodies. The Applicant should explain the projected impacts to these resources and identify any mitigation measures undertaken to minimize water quality impacts.

E. Fugitive Dust Impacting Water Quality

The Dust Mitigation Plan (Appendix C) appears to underestimate the amount of fugitive dust generated during the construction, operation, and decommissioning of the project due to incomplete data used in dust mitigation calculations. For example, the affected acreage provided in the table on page 28 appears incorrect. Based on other parts of the

Application, the affected acreage is *significantly greater* than 758 acres.[6] The Dust Mitigation Plan does not address water quality impacts predicted both from fugitive dust emissions and from any mitigation efforts that could create additional discharges into waterbodies, such as road spraying. The monitoring plan describes an internal process for inspecting dust, but does not include a method for reporting on findings and efficacy of mitigation to the County.

> Recommendation E.i. The Applicant should describe fugitive dust generated during project decommissioning and mitigation measures to be undertaken.
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> Recommendation E.ii. The Applicant should further quantify the rate and volume of water necessary to accomplish dust suppression for the project during construction, operation, and decommissioning. The Water Supply Plan (Appendix R) reports that approximately 125 acre-feet of water will be required for project construction. If the water is used entirely for dust suppression, it equates to just under 1 inch of water per acre. Given the duration of the project, 18 months, the volume of water available for dust suppression appears inadequate.
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> Recommendation E.iii. In the Stormwater Water Quality Plan (Appendix F) the Applicant proposes to reduce soil density as a technique to reduce runoff and erosion during construction and operation of the project. Given the fine-grained texture, salinity, and in some cases sodicity of the soils in the project area, how will ongoing dust suppression affect soil physical characteristics?
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> Recommendation E.iv. The Applicant should further explain its calculations for the Dust Mitigation Plan. For example, why did the Applicant elect to use cut/fill rates from the Yellow Pine Solar Project EIS? Given the proposed grading provided in the site plan (i.e., Sheets 3.1 to 3.8), the Applicant should compute the cut/fill rates based on this project.
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> Recommendation E.v. The Applicant should describe water quality impacts predicted both from fugitive dust emissions and from any mitigation efforts that could create additional discharges into waterways, such as water applied for dust suppression along haul routes. The Applicant should describe how water quality impacts will be mitigated.
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> Recommendation E.vi. The County should consider requiring reporting on the efficacy of dust control measures no less than annually.

F. Costs of Soil Decompaction as part of Decommissioning

[6] The total acreage is reported differently in different parts of the Application, and thus is not quoted in this memo.

The Decommissioning and Reclamation Plan (Appendix J) incorporates practices described in other plans. Our consistency review identified several additional types of information and analysis necessary to prevent water quality degradation. Those measures need to be considered in the revised Decommissioning and Reclamation Plan.

The current site restoration cost estimate equates to roughly $555 dollars per acre. Given the extensive machine work necessary to decompact soils in the project area, the restoration cost estimate appears insufficient.

> Recommendation F.i. Revise the site restoration cost estimate to more accurately estimate the costs.

IV. Conclusion

NWCCOG finds that the Project is not currently consistent with the 208 Plan Policy 3 and offers recommendations that could allow NWCCOG to reconsider its determination at a later date.