September 14, 2021

Ms. Eva Zaki-Dellitt
US Army Corps of Engineers
Tulsa District, Regulatory Branch
2488 E 81st Street
Tulsa, OK 74137-4290

Re: Honey Springs Mitigation Bank Addendum - Oklahoma Stream Mitigation Method Integration
McIntosh County, Oklahoma
USACE Project No.: SWT-2019-218

Ms. Zaki-Dellitt:

Green Country Wetland Mitigation, LLC (GCWM) and Hoffman Environmental, Inc. (HEI) are submitting the following supplemental information associated with the integration and implementation of the Oklahoma Stream Mitigation Method (OSMM) into the Mitigation Banking Instrument (MBI) for Honey Springs Mitigation Bank (HSMB) located in McIntosh County, Oklahoma. The information covered in this addendum consists of an overview of the OSMM mandate by the Tulsa Corps, overview of OSMM construct and components, summary of available stream credits at HSMB, credit conversion calculations and revised credit totals, and governing guidelines for OSMM implementation at HSMB.

OSMM Mandate

The Tulsa District U.S. Army Corps of Engineers (USACE) finalized the OSMM in August of 2021 and mandated that all new permitted projects utilize the method to determine the appropriate compensatory stream mitigation required for applicable projects. As a result, existing USACE-approved mitigation banks are also required to recalculate the number of available stream credits based on the OSMM and provide an addendum to the bank's MBI for future application. This step is necessary to ensure that there can be an equitable transaction between the impactor and mitigation provider. It is important that all parties (e.g. USACE, permittee, banker) involved in assessing potential project impacts to waters of the U.S. use the same methodology construct to determine required compensatory mitigation for impacts and/or credit generation for mitigation.

OSMM Overview

The Tulsa District USACE developed the OSMM to be a rapid stream assessment tool to provide a consistent rationale when determining appropriate compensatory stream mitigation. As stated by the USACE, the OSMM could be paired with other functional assessment methods, such as Hydrogeomorphic Method, Rapid Stream Assessment Technique and/or Index of Biologic Integrity, when deemed practical or necessary.

OSMM calculations for In-Stream credit generation are based on six primary variables, consisting of Stream Type (ST), Priority Waters (PW), Net Benefits (NB), Site Protection (SP), and Credit Schedule (CS), as detailed on In-Stream Worksheet (A-2). The variables constitute the Sum of Factors which is multiplied by the linear feet of stream length benefitted to determine the total number of In-Stream credits generated at the bank site for each type of stream. In addition to the In-Stream calculations for credit valuation, Riparian Buffer credit is also factored into overall credit generated per linear foot of stream benefitted. In order to calculate Riparian Buffer credit, seven primary variables are used consisting of Stream Type (ST), Priority

Waters (PW), Net Benefit (NB), Supplemental Buffer Credit (SBC), Site Protection (SP), Credit Schedule (CS), and Temporal Lag (TL), as detailed on Riparian Buffer Worksheet (A-3). The variables constitute the Sum of Factors which is multiplied by the linear feet of stream length benefitted to determine the total number of Riparian Buffer credits generated at the bank site for each stream type. To determine the total number of stream credits for each stream type at the bank, the total number of In-Stream credits is added to the total number of Riparian Buffer credits.

Stream Credits at HSMB

Stream credits calculated under the original MBI and currently available for sale at HSMB Old Field Tract and Elk Creek Tract (see Table 2), as of the date of this correspondence, consist of 623.4 perennial stream, 11,307.5 intermittent stream (less 2,175.0 already sold) and 5,372.1 ephemeral stream, which equates to 3,117.0 linear feet of perennial stream, 10,654.0 linear feet of intermittent stream and 7,805.0 linear feet of ephemeral stream. These stream credit totals constitute all of the stream credits that have been released and are currently available for sale HSMB.

OSMM Stream Credit Conversion

When calculating the number of stream credits generated at a particular mitigation site, the first step consists of the In-Stream component. Using the In-Stream factors and corresponding variables, as described above for the OSMM, the Sum of Factors for each stream type was calculated for the HSMB Old Field Tract and Elk Creek Tract and is detailed in Table 1 and In-Stream Worksheets (A-2), included as attachments to this report. First, the appropriate value for Stream Type (ST) was applied to each stream type for the Old Field Tract and Elk Creek Tract, which consisted of 0.4, 0.2 and 0.15 for perennial, intermittent and ephemeral streams, respectively. Next, for the Priority Waters (PW) variable, a value of 0.2 was applied to all stream types on the HSMB because OSMM guidance defines Secondary Priority Waters to include "*Abutting an approved consolidated mitigation site (banks and in-lieu fee sites)*". It is reasonable to conclude that the guidance infers that since waters abutting a mitigation bank or in-lieu fee site are deemed Secondary Priority Waters, that waters located within a mitigation bank or in-lieu fee site would be deemed Secondary Priority Waters by extension of the definition. Regarding Net Benefits (NB), all of the streams on the HSMB were given a value of 3.5 (excellent), since the majority of the in-stream work consisted of increasing stream stability, stream channel rehabilitation, channel reconnection, increased hydrologic interaction between the streams and floodplain, reduced channel erosion, reversing channel incision, and finally as a result of these actions, overall on-site aquatic resources will be benefitted, as well as at the landscape and watershed level. Regarding Site Protection (SP), HSMB has a USACE-approved, conservation easement recorded with a third-party grantee; therefore, a value of 0.5 was attributed to this variable. As defined in the OSMM guidance, all mitigation banks qualify for Credit Schedule 1, which has a value of 0.3. Based on the values assigned to the variables described above, the Sum of Factors for the In-Stream credit calculations for the Old Field Tract are 4.7 for intermittent streams and 4.65 for ephemeral streams. The Sum of Factors for the Elk Creek Tract are 4.9 for perennial streams, 4.7 for intermittent streams and 4.65 for ephemeral streams.

The second step consists of the Riparian Buffer component. Using the Riparian Buffer factors and corresponding variables, as described above for the OSMM, the Sum of Factors for each stream type was calculated and is detailed in Table 1 and Riparian Buffer Worksheets (A-3), included as attachments to this report. First, the appropriate value for Stream Type (ST) was applied to each stream for the Old Field Tract and Elk Creek Tract, which consisted of 0.4, 0.2 and 0.15 for perennial, intermittent and ephemeral streams, respectively. Next, for the Priority Waters (PW) variable, a value of 0.2 was applied to all stream types on the HSMB because, as previously stated, OSMM guidance defines Secondary Priority Waters to include "*Abutting an approved consolidated mitigation site (banks and in-lieu fee sites)*". It is reasonable to conclude that the guidance infers that since waters abutting a mitigation bank or in-lieu fee site are deemed Secondary Priority Waters, that waters located within a mitigation bank or in-lieu fee site would be deemed Secondary Priority Waters by extension of the definition. Net Benefit (NB) for riparian buffers is based on

the percentage of vegetation within each buffer that is restored/established, enhanced or preserved. All of the stream buffers on the HSMB has between 51-100% of the buffer area that has been planted, and/or undesirable vegetation removed, and the appropriate native vegetation planted. As a result, since all of the streams on HSMB have a designated minimum buffer width of 25 feet, the value assigned to both Sides A and B is 0.1. OSMM guidance specifies that additional mitigation credit, or Supplement Buffer Credit (SBC), may be generated if minimum width buffers, or greater, are restored/established, enhanced, or preserved on both stream banks, which is the case for all the streams on the HSMB. As a result, a value of 0.5 has been assigned to all of the streams on HSMB. Regarding Site Protection (SP), HSMB has a USACE-approved, conservation easement recorded with a third-party grantee; therefore, a value of 0.5 was attributed to this variable for all streams. As defined in OSMM guidance, all mitigation banks qualify for Credit Schedule 1, therefore, a value of 0.3 was given to all Stream Sides A and B. Finally, Temporal Lag (TL) is defined as the time required, in years, for a mitigation area to fully replace the riparian vegetation size and age class lost at the impact site. Since all restoration, establishment and enhancement activities are completed, and meet predetermined success criteria, before credits are released for sale, and before the impact activities are incurred, the most logical period that would apply to mitigation banks is 0 to 5 years, which has a value of 0.0. Based on the values assigned to the variables described above, the Sum of Factors for In-Stream credit calculations for the Old Field Tract are 1.8 for intermittent streams and 1.75 for ephemeral streams. The Sum of Factors for the Elk Creek Tract are 2.0 for perennial stream, 1.8 for intermittent streams and 1.75 for ephemeral streams.

Table 1. Summary of OSMM In-Stream and Riparian Buffer Factors and Variables for Streams on HSMB.

OSMM Factors	**Old Field Tract Stream Type**			**Elk Creek Tract Stream Type**		
	Intermittent Streams	**Ephemeral Stream 1**	**Ephemeral Streams 2-5**	**Perennial Stream**	**Intermittent Streams**	**Ephemeral Streams**
In-Stream Factors						
Stream Type (ST)	0.2	0.15	0.15	0.4	0.2	0.15
Priority Waters (PW)	0.2	0.2	0.2	0.2	0.2	0.2
Net Benefits (NB)	3.5	3.5	3.5	3.5	3.5	3.5
Site Protection (SP)	0.5	0.5	0.5	0.5	0.5	0.5
Credit Schedule (CS)	0.3	0.3	0.3	0.3	0.3	0.3
Sum of Factors	**4.7**	**4.65**	**4.65**	**4.9**	**4.7**	**4.65**
Riparian Buffer Factors						
Stream Type (ST)	0.2	0.15	0.15	0.4	0.2	0.15
Priority Waters (PW)	0.2	0.2	0.2	0.2	0.2	0.2
Net Benefit (NB)	-	-	-	-	-	-
Stream Side A	0.1	0.1	0.1	0.1	0.1	0.1
Stream Side B	0.1	0.1	0.1	0.1	0.1	0.1
Supplemental Buffer Credit (SBC)	0.1	0.1	0.1	0.1	0.1	0.1
Site Protection (SP)	0.5	0.5	0.5	0.5	0.5	0.5
Credit Schedule (CS)	-	-	-	-	-	-
Stream Side A	0.3	0.3	0.3	0.3	0.3	0.3
Stream Side B	0.3	0.3	0.3	0.3	0.3	0.3
Temporal Lag (TL)	0.0	0.0	0.0	0.0	0.0	0.0
Sum of Factors	**1.8**	**1.75**	**1.75**	**2.0**	**1.8**	**1.75**

Once the Sum of Factors for In-Stream and Riparian Buffer credit calculations were determined, the total number of potential credits for each stream type on HSMB was calculated for both In-Stream and Riparian Buffer categories using the linear feet of stream benefitted available at HSMB (see Table 2). Accordingly, the number of OSMM converted intermittent and ephemeral stream credits for the In-Stream category on the Old Field Tract consists of 42,379.9 and 20,794.9, respectively. Additionally, the number of OSMM converted intermittent and ephemeral stream credits for the Riparian Buffer category on the Old Field Tract consists of 16,230.6 and 7,826.1, respectively. Therefore, the total number of potential stream credits at the HSMB Old Field Tract based on the OSMM conversion is 58,610.5 intermittent and 28,621.0 ephemeral. As for the Elk Creek Tract, the number of OSMM converted perennial, intermittent and ephemeral stream credits for the In-Stream category consists of 15,273.3, 7,693.9 and 15,498.5, respectively. Additionally, the number of OSMM converted perennial, intermittent and ephemeral stream credits for the Riparian Buffer category on the Elk Creek Tract consists of 6,234.0, 2,946.6 and 5,832.8, respectively. Therefore, the total number of potential stream credits at the HSMB Elk Creek Tract based on the OSMM conversion is 21,507.3 perennial, 10,640.5 intermittent and 21,331.3 ephemeral.

Table 2. Summary of OSMM Stream Credit Conversion on HSMB.

Stream Type	**Old Field Tract**			**Elk Creek Tract**		
	Sum of Factors	**Stream Length Benefitted (LF)**	**OSMM Credits**	**Sum of Factors**	**Stream Length Benefitted (LF)**	**OSMM Credits**
In-Stream Credits						
Perennial Stream	NA	NA	NA	4.9	3,117.0	15,273.3
Intermittent Streams	4.7	9,017.0	42,379.9	4.7	1,637.0	7,693.9
Ephemeral Stream 1	4.65	2,175.0	10,113.8	NA	NA	NA
Ephemeral Streams	4.65	2,297.0	10,681.1	4.65	3,333.0	15,498.5
Riparian Buffer Credits						
Perennial Stream	NA	NA	NA	2.0	3,117.0	6,234.0
Intermittent Streams	1.8	9,017.0	16,230.6	1.8	1,637.0	2,946.6
Ephemeral Stream 1	1.75	2,175.0	3,806.3	NA	NA	NA
Ephemeral Streams	1.75	2,297.0	4,019.8	1.75	3,333.0	5,832.8
Total Potential Stream Credits to be Released						
Perennial Stream	NA	NA	**NA**	6.9	3,117.0	**21,507.3**
Intermittent Streams	6.5	9,017.0	**58,610.5**	6.5	1,637.0	**10,640.5**
Ephemeral Streams	6.4	4,472.0	**28,621.0**	6.4	3,333.0	**21,331.3**

Guidelines for Using OSMM at HSMB

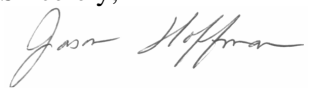
The permittee/applicant will be responsible for determining the amount of compensatory stream mitigation that will be required for a particular project using the OSMM and attain approval from the USACE before credit transactions are completed at HSMB. As deemed appropriate by the USACE, additional mitigation may be required for projects that are located outside of the primary service area of HSMB.

HSMB will utilize the OSMM for available stream credit totals and debits as transactions occur as required by the MBI and USACE. If at any time in the future the USACE rescinds the mandate that the OSMM must

be used by permittees and mitigation banks, then HSMB will revert back to the original credit valuation methodology and mitigation ratios as detailed in the MBI and all remaining stream credits will be recalculated accordingly.

If you have questions or need additional information, please do not hesitate to give me a call.

Sincerely,



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cc: Mr. Ed Parisotto, USACE Tulsa District – 1 copy w/attachments
Mr. Steven Dunnavant, Green Country Wetland Mitigation, LLC – 1 copy w/ attachments
Mr. Jason Hoffman, Hoffman Environmental, Inc. - 1 copy w/ attachments